

Evolving Music Education in the Digital Age

Sound-Based Music in Public Schools of Cyprus

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Abstract

Years now, sound-based music has been struggling to reach a wider public. Research supports that in order to promote sound-based music, it should be introduced at an early age in someone's life to have the opportunity to familiarise himself/herself with it and accept it (Kopiez and Lehmann, 2008). This thesis investigates the implementation of sound-based music in public schools in Cyprus. Building on previous research aiming to introduce sound-based music ideas and concepts into the music classrooms (Savage, 2005; Higgins and Jennings, 2006; Wolf, 2008; Holland, 2011), this research aims at creating a sound-based music curriculum that will be appropriate for implementation in a teaching-learning environment in Cyprus.

The research focuses on the Educational Reform Programme of Cyprus (2008-2015), which aims at modernising the Cypriot education system. This project offers the opportunity to investigate a set of sound-based music lesson plans, implemented in music classrooms. The research examines the reactions of teachers and students towards these lessons, and the evaluation of the lesson plans in order to be suitable for primary and secondary schools of Cyprus. It is an interdisciplinary project, allowing for educational as well as musical concepts to inform its content and structure. The research follows a grounded theory methodology, utilising a mixed-methods approach involving multi-site case studies and action research. In total of six schools, with six teachers and 117 students, eight different sound-based music lesson plans were created, implemented and evaluated, in a total of 18 lesson periods. During these lessons, a combination of questionnaires, interviews, observations, visual data and tests have facilitated the collection of both qualitative and quantitative information relating to the teachers, the students and the lesson plans.

Findings of this research identify that the specific set of lesson plans implemented in the schools is considered as appropriate to be used in the music classrooms of Cyprus. The sound-based music lessons introduced new ways of using ICT in the music classroom, supporting the national initiatives of the Ministry of Education and Culture of Cyprus. It was also identified that these lessons offer an inclusive education, with creative activities, engaging students with the learning experience. However, the outcomes of the research recognised the need to understand the multidimensional change necessary to take place before such an implementation, such as the need to resolve any teachers' concerns relating to the implementation of innovative material as well as any issues related to the equipment.

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List of Abbreviations

CEE: Centre of Environmental Education

CES: Cypriot Education System

CPD: Continuous Professional Development

ERP: Educational Reform Programme

EU: European Union

ICT: Information and Communication Technology

KS3: Key Stage 3

LMS: Learning Management System

MoEC: Ministry of Education and Culture

NTM: Non-Traditional Music Student

PI: Pedagogical Institute of Cyprus

SAM: Sound and Music website

SbM: Sound-Based Music

UK: United Kingdom

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Chapter 1: Introduction to the Research

1.1. Introduction

This interdisciplinary pedagogical research takes place in public schools of Cyprus, investigating the implementation of sound-based music (SbM) lessons as part of the music curriculum. Sound-based music is defined as the “art form in which the sound and not the musical note is the basic unit” (Landy, 2007:17), and is related to electroacoustic music. The researcher’s choice of the term SbM over the term electroacoustic music for the purposes of this research project is explained in the Literature Review (Chapter 3). This PhD thesis presents SbM as a “supergenre”, as defined by Landy (2007:175), which includes electroacoustic music.

The key goal of this research is to create a SbM curriculum, which would be appropriate for implementation in the music curriculum of Cyprus. Currently the music curriculum of Cyprus is under revision and evaluation by the Ministry of Education and Culture (MoEC), as part of a major Educational Reform Programme (ERP), which aims at modernising the educational system of Cyprus. The research investigates the possibility of SbM to be implemented as part of the New Music Curriculum (2010) prepared during the ERP and identify any educational benefits observed following its implementation.

The research aims at investigating specific SbM lesson plans implemented in public schools, which relate to the basic ideas and techniques around SbM. These lesson plans have been developed by the researcher as part of a grounded theory approach, under the critical paradigm, utilising mixed methods. The methodology follows an action research strategy, using a multi-site case study method in order to collect and analyse a variety of data from different school situations. The purpose of the SbM lesson plans as well as of this thesis is for teachers and music teachers in schools, even those with limited or no knowledge around SbM, to educate students between 9 and 14 years old to this music. The research is also useful for politicians, who can influence educational policy, to fully understand the benefits of the use of SbM as part of a music curriculum. Nonetheless, it is worth mentioning that the present thesis could be used as supporting material for teaching SbM outside school or in higher education.

The SbM lessons are structured using educational techniques of learning and teaching from music education, following the guidelines of the MoEC in relation to the

New Music Curriculum (2010). The content of the SbM lesson plans is based on basic and core ideas and techniques of SbM, which can be taught as well as understood by teachers and students without any previous knowledge of SbM. The lessons relate to the three key areas of the New Music Curriculum (2010) of Cyprus, which are listening, composing and performing, as identified in the Educational Context (Chapter 2).

Additionally to the pedagogical aim of this research, which is to create a SbM curriculum appropriate for the music classroom, the researcher supports that this implementation will possibly minimise the accessibility gap that exists between SbM and the wider public, if this music is introduced early in students' lives.

More specifically, the research aims at identifying:

1. What are the prerequisites for SbM lesson plans to be implemented in the New Music Curriculum (2010) of Cyprus?
2. How do these SbM lesson plans influence the teachers and the students and which are the benefits of such an implementation, if any?
3. Are teachers willing to teach SbM as part of the New Music Curriculum (2010) and can this promote SbM amongst young people?

1.2. Structure of the Thesis

Corresponding to the above research questions, the thesis is structured as follows:

- In Chapter 2 the educational background of Cyprus is explored, as this background is critical for the implementation of the SbM lesson plans in the music classrooms. Thus, it is essential to investigate the Cypriot Educational System (CES), in order to support the structure of the SbM lesson plans.
- In Chapter 3 the literature in relation to SbM is discussed along with previous research in the field of education, which utilises SbM.
- In Chapter 4 the theories relating to both education and SbM, which guide the content of the lessons, are outlined. In particular, the pyramid design of the SbM lesson plans is explained with short descriptions of the lessons created.
- In Chapter 5, the methodology guiding this research is discussed.
- In Chapter 6, the findings and analysis of the results are explained, and
- In Chapter 7 the conclusions are drawn by the researcher.

More specifically, **Chapter 2** explores the historical background of Cyprus, which affects the educational policy of the island. In 1974 Cyprus was divided into two areas, Greek-Cypriot and Turkish-Cypriot. After long negotiations, the State of Cyprus successfully entered the European Union in 2004, guiding Cyprus towards modernisation and reconstruction. However, due to the bi-communalism and division of the island, the research took place on the South side of the island, which is the legal state of the country.

Chapter 2 examines the reconstruction of the Cypriot Education System (CES) as part of the ERP. The ERP (2008 – 2015) aims at identifying the problems of the CES, evaluating it and transforming it following the guidance of the European Union. The ERP affects also the curriculum, offering the opportunity for pedagogical research in schools. Moreover, the chapter investigates the New Music Curriculum (2010) developed by MoEC in 2010 as part of the ERP, which guided the structure of the SbM lesson plans. Additionally, this chapter identifies any issues around Information Communication Technologies (ICT). ICT play a huge role in the modernisation of the music curriculum and are considered as a priority for the development of the New Music Curriculum (2010). Thus, research in relation to ICT is also presented in this chapter, with view to identifying any issues that could influence the implementation of the SbM lesson plans which use ICT.

Chapter 3 identifies the theoretical background of this research in relation to SbM. It discusses the literature around SbM investigating issues regarding terminology and accessibility. Moreover, the chapter identifies previous educational research in relation to education and SbM. This literature review is primarily focused on the research by Savage (2005), Higgins and Jennings (2006), Wolf and Landy, (2008) and Holland (2012). These researchers provide important information regarding the structure, content and the methodology that could be used in this research project. Nevertheless, other educational projects taking place in the UK and Greece are also presented, which relate to SbM. This chapter focuses on the identification of research that could contribute to the development of the content of the SbM lesson plans to be implemented in schools. The primary research initiatives identified originate from the United Kingdom (UK) and Greece, due to the fact that the CES is almost identical to the Greek Educational System and follows an “adapted education” policy based on the British Colonial Education (Persianis, 1996).

Chapter 4 offers an overview of theories, which guide the creation of the SbM lesson plans, used in schools. The chapter identifies the literature in relation to music education as well as teaching and learning theories, which informed the structure of the SbM lesson plans. This chapter also presents basic theories in relation to SbM corresponding to the three key areas: listening, composing and performing. These areas guide the development of the content of each of the lesson plans implemented in schools through the research. There follows a presentation of the pyramid structure, which was followed for the creation of the SbM lesson plans, identifying the levels of complexity of the SbM lessons. Finally, an outline of each lesson plan created for this research project is presented.

Chapter 5 illustrates the methodology followed by the researcher. The research is guided by the critical paradigm, as identified in Chapter 5, and follows a mixed-methods approach. This research, being the first taking place in Cyprus in relation to SbM in music education, follows the grounded theory approach, so as to be flexible and allow as much data as possible to be gathered. This will improve the quality of the structure of the SbM lesson plans to be implemented in schools. Within the grounded theory approach the research is using action research in parallel with the multi-site case study methodology. The research takes place in 6 schools with 6 teachers and 117 students, age between 9 and 14 years old. In each case study, data are gathered through questionnaires, interviews, observations, tests and visual data, which are then analysed in a systematic way until theoretical saturation is reached, as guided by the grounded theory approach.

Chapter 6 presents the findings of the data analysis in each case study after Open, Axial and Selective coding and analyses these in relation to the literature presented in Chapter 2, 3 and 4. In each case study there are distinct themes that emerge from the implementation of the SbM lesson plans and are presented in a systematic way throughout the chapter. Chapter 6 also presents the data gathered through the completion of a Respondents Validation questionnaire given to the participating teachers. This questionnaire presents results to teachers after the analysis of data, in order for them to validate these results, relating to their experience. These results are also presented in relation to the themes that emerged, which can be divided in categories in relation to a teacher, student and lesson perspective. These form the three key categories, which include the main themes emerged from the coding of the case studies during analysis.

Chapter 7 is the final chapter of the thesis and presents the key themes in relation to the three categories, which were identified in Chapter 6. These key themes correspond to the research questions as presented earlier in this chapter and contribute to new knowledge in relation to:

- The creation of an appropriate SbM teaching material, which can be implemented in the music classrooms as part of a music curriculum. This is presented as the Teacher's Information Pack attached to the thesis.
- The benefits for both teachers and students in relation to teaching and learning of SbM, including educational and technological benefits.
- The willingness of participating teachers to teach SbM as part of the New Music Curriculum (2010), but also the need of a supportive environment to eliminate any teachers' concerns in relation to innovative material. Students are also willing to learn more things related to SbM and especially as part of an introduction to music technologies.
- The identification that the socioeconomic background of the school (and/or the students) does not affect the delivery of the SbM lessons. Moreover, issues relating to the three types of teachers, who are able to teach music in public schools, are also eliminated, as the research proved that the SbM lessons presented can be adjusted to meet the teachers' abilities.

The outcomes of the research support that both teachers and students successfully received the SbM curriculum presented in the cases studies. These outcomes are going to be presented to the appropriate department of the MoEC for evaluation and the expectation is that this SbM curriculum will be implemented (in some form) in Cyprus and, ideally, elsewhere. The Teacher's Information Pack (which includes all the SbM lesson plans implemented in the research) has already been reviewed by a member of the MoEC and has been considered as appropriate for publication as a teaching aid.

Chapter 2: The Cypriot Educational Context and the Innovation of ICT

2.1. Introduction

This chapter outlines the context of the research in relation to the educational background of Cyprus and the introduction of ICT as part of the national curriculum of Cyprus. This research is taking place in Cyprus, during the Educational Reform Programme (ERP), which started in 2008 and will continue until 2015. The importance of this research, taking place during this ERP, lies on the fact that it is evaluating innovative material. The aim is for this material to be implemented in the New Music Curriculum of Cyprus (2010)¹.

Examining the background context of the educational system of Cyprus will allow the researcher to identify any issues that could influence the implementation of new material, such as that of the SbM lesson plans. These issues are taken into account prior to the research itself. The ERP follows the guidelines of the European Union and an investigation of the current state of the Educational System and its evaluation is important, in order to fully comprehend the necessary changes that the ERP is going to introduce into the Cypriot Education System (CES).

Information Communication Technology (ICT) is presented as a major innovation for the curriculum and it influences the content of the New Music Curriculum (2010). The importance of ICT, as part of education and in particular the New Music Curriculum (2010), needs a separate section for investigation, in order to identify and distinguish the relevant issues that arise before and after its implementation, as well as the benefits of such an implementation. The research in the areas of ICT and education is presented in this chapter (see p.31). This research project takes into consideration these issues

¹ This material is attached at the end of this thesis in the form of a “Teacher’s Information Pack”.

prior to the creation of the SbM lesson plans, in order to aid teachers and students alike to use technologies through these SbM lessons.

The chapter begins with a summary of the historic framework of the Cypriot Education, which is essential for the understanding of the diverse social framework of the island. This framework also influences the choice of the researcher to research the Greek-Cypriot educational context of the island, rather than the Turkish-Cypriot educational context, as it will be identified below.

2.2. Historical framework of the Cypriot Education

The diverse historical background of Cyprus affects every aspect of the social and political life of its citizens. Thus, it is important to identify and consider the historical background of the island prior to the research itself, as it influences many aspects of the research.

In 1960, Cyprus gained its independence after a long period of being a British Colony. The fact that Cyprus was under the British command affected the educational system of the island, which followed the British educational system. The newly established state of the Republic of Cyprus has faced many difficulties since its very beginning. These problems were not only educational, but also political, economic and social, which troubled the society of Cyprus. Today, Cyprus is separated in two major communities; the Greek-Cypriots and the Turkish-Cypriots. This bi-communalism, affected the educational system. Each of the two communities is responsible for and controls the education and culture of its own side through Communal Chambers. Nonetheless, in 1963 the Turkish mutiny destroyed the communal assemblies and the MoEC took on the responsibilities of the Greek-Cypriot assembly. The year 1974 marks the most dramatic point in the contemporary history of Cyprus. It is both a stopping and a starting point of change in all aspects for the Cypriot Society, including education. In 1974, the coup d'état marked the time of war between the Greek and Turkish communities, which allowed the invasion of non-Cypriot military forces in Cyprus, dividing the island into two distinct areas in relation to ethnicity (MoEC, 2008).

After the invasion, a need for change in the direction of education emerged. The new conditions in politics, economy and society of Cyprus called for a change in education. Even though the Greek-Cypriot education followed the content of the educational

system of Greece wrapped in a British educational context - an outcome of the British Colony-, it was time for a systematic effort for reformation and upgrade of the educational system. There was a need for change of philosophy, structure, curriculum, teaching methods, training of the teaching staff and educational administration.

Nonetheless, the MoEC was interested in the philosophies followed by the European Nations. Feelings of acceptance, tolerance and understanding of diversity were important for keeping the society of Cyprus in balance. In 2004 Cyprus joined the European Union (EU) after long negotiations due to the fact that the island was divided in two. However, the *acquis communautaire*² of the EU is related to the areas where the Government of the Republic of Cyprus is in control (MoEC, 2008), thus the Greek-Cypriot side. Due to this, the two communities still follow different educational systems, and only the Greek-Cypriot education is under evaluation from the EU. Consequently, this research is taking place in the areas, which are under the control of the Government of the Republic of Cyprus, which are following the educational system of the Greek-Cypriot community.

2.2.1 Evaluation of the Educational System of Cyprus

2.2.1.1. Aims of the Cypriot Education

“The overall aim of education in Cyprus is the development of free and democratic citizens...who contribute...to the promotion of cooperation, mutual understanding, respect and love among individuals and people for the prevalence of freedom, justice and peace” (MoEC, 2009:1).

The education offered by the MoEC is free and supports the above aims of the education of Cyprus. The structure of the Educational System is divided in administration departments that are responsible for all levels of education. The following table presents useful information regarding the these levels, departments, institutes, centres and age levels.

² *Acquis communautaire* is the accumulated legislation, legal acts and court decisions, which constitute the body of European Union law.

Table 2.1: Structure of the Cypriot Education System

<u>Structure of the educational system</u>		
Degree/Administration	Age group	Department/Institution:
Pre-primary education	3-6	Department of Primary Education
Primary school	6-12	Department of Primary Education
Lower Secondary School (Gymnasium)	12-15	Department Of Secondary General Education
Upper Secondary School (Unified Lyceum or Technical/Vocational school)	15-18	Department Of Secondary General and/or Dep. Of Secondary Technical and Vocational Education and Training
Higher and University Education	No age limit	Department Of Higher and Tertiary Education
Teacher Training, Documentation, Program Development	-----	Pedagogical Institute
Educational Research and Evaluation	-----	Centre for Educational Research and Evaluation

Mandatory education includes Pre-primary education (one year duration), Primary and Lower Secondary Education (4 years and 8 months old-15 years old). Mandatory education is free in public schools. Upper Secondary Education and Technical and Vocational Education and Training is still free, but not mandatory.

The MoEC, regarding children with special educational needs, has adopted the principles of the Salamanca Statement in the Education of Children with Special Needs Law (L113(1)/1999). This statement regulates issues concerning the identity of children with special education needs, ensuring their inclusion in regular schools and the provision of education according to their needs. There is also an Educational Psychology Service that advises both teachers and students on learning difficulties and other personal difficulties or adjustment issues.

In the private schooling sector, the institutes/schools offer curriculum programs in general education, specialised fields and languages. Usually the basic languages are English, French, Italian or Arabic. The present research takes place in the public schools of Cyprus, where the first language is Greek. Thus the material presented to the schools was created in Greek and then translated in English for the purposes of this thesis.

2.2.1.2. The problems of the current state in Education ()

When Cyprus joined the EU in 2004, evaluation and modernisation of education was necessary according to the EU guidelines. Even before the integration of Cyprus in the EU, an evaluation of the Educational System of Cyprus had begun in autumn 2003. The Ministry Board nominated a seven-member academic committee, the Committee for the Educational Reform (Επιτροπή για την Εκπαιδευτική Μεταρύθμιση-ΕΕΜ), to initiate a project of research and evaluation of the CES. The outcome of this evaluation research was a report outlining suggestions for the reconstruction and modernisation of the CES targeting an overall educational reformation. In 2004, the Committee submitted the aforementioned report (Evaluation Report, 2004)³, which identified the weaknesses of the CES and outlined some recommendations for reformation.

³ The report of the Committee of the Educational Reform will be referenced as the "Evaluation Report" throughout the thesis. It can be found in the References as: Επιτροπή Εκπαιδευτικής Μεταρύθμισης (2004), *Δημοκρατική και Ανθρώπινη παιδεία στην Ευρωπαϊκή Πολιτεία. Προοπτικές ανασυγκρότησης και εκσυγχρονισμού*. Υπουργείο Παιδείας και Πολιτισμού Κύπρου.

The weaknesses that the Committee outlined, arising from the social values and changes, the joining of the European Union, the general orientation of the State and the international challenges, were identified in the following areas:

1. Structure and Organization of the MoEC
2. Structure and organisation of the Educational System
3. Curriculum, Schooling Knowledge and Pedagogical-Teaching Procedures
4. Multicultural Education
5. Higher Education
6. School units and educators' work
7. Teacher Training

(Evaluation Report, 2004)

(More details can be found in Appendix A)

2.2.2. Educational Reform Programme (2008-2015)

Following the Evaluation Report (2004) and several national reports (MoEC 2001, 2008, 2010), the MoEC focused on an ambitious Educational Reform Programme (ERP). Following dialogue between all stakeholders (Political Parties, Teacher Unions, Parents Association, Associations of Students, and the Government, represented by the MoEC and the Planning Bureau) (MoEC, 2008:11) this on-going ERP is an attempt to build a better and more modern educational system for Cyprus. The ERP follows the guidelines of the EU to promote the existence of democratic citizens of the world (ibid: 11) (More details can be found in Appendix B).

In the National Report of Cyprus of 2008 (MoEC 2008), it is mentioned that “the on-going Educational Reformation is an effort for a comprehensive introduction of changes and innovations at all levels and all aspects of the educational system” (ibid, 11; UNESCO 2010/11:2) This ERP started in 2008 and the estimated time for the project to be completed is 2015. The MoEC “is proceeding into the 21st century in a context that is offering an opportunity for important *innovations* in education” (MoEC, 2001: 85) (emphasis added).

The main goals of these innovations are outlined below:

1. The need for a flexible programme, enriched with educational technologies, able to satisfy the needs of contemporary democratic citizens, offering them opportunities for learning and supporting their intellectual skills.
2. The need for an inclusive education that will offer equal and effective educational opportunities according to individuals' needs.
3. The need for modernisation of the system, in order to correspond to the Society of Knowledge and the Information Society of the 21st century.
4. Service to the general goals of the country (ibid; Evaluation Report, 2004).

This research aims at enhancing these goals, particularly for music education, through the implementation of innovative material in the music classrooms. This material based on SbM, will attempt to promote inclusive education and music education enriched with educational technologies, which will enhance the learning of the students.

In order for these innovations to be established, changes in the problematic areas of the CES were necessary. The areas that can affect this research and that are taken into account prior to the research itself are: the revision of the national curriculum, the introduction of ICT in the classrooms, the training of the teachers, the introduction of an inclusive education and the strategy for lifelong learning. These areas are discussed in more detail below.

2.2.2.1. National Curriculum

The on-going ERP not only affected the organisation and structure of the MoEC but also the national curriculum. The national curriculum of Cyprus is under revision in order to be modernised and upgraded, so that it better addresses the needs of the students of the 21st century. This revision is holistic, including the national curriculum of pre-primary education, primary education to secondary general, technical and vocational education. There is a clear need for an “integrated continuum of early childhood education, pre-primary education, primary education, secondary general and secondary technical and vocational education” (MoEC 2008:13).

The national curriculum is being revised with special emphasis on the key contents of individual subjects as well as on schooling knowledge, teaching and learning and modernisation of the schoolbooks towards the direction of a multicultural education. A new core curriculum is being revised and must be implemented at the same time in all

schools, in order for the educational system to have the same level throughout a unified education. The core subjects of the secondary education are also being revised in order to be adopted in all secondary schools, including the technical and vocational lyceum, to produce only one unified national Apolytirion⁴. A Committee of Experts assigned by the Government has prepared recommendations for the development of the new curriculum. The overarching aim is to support students' individual needs and choices, following the key competences European citizens should acquire. It is important that new technologies are incorporated in the new curriculum for the modernisation of the system.

The researcher identified an opportunity for research inside schools during the evaluation of the national curriculum. This would offer an insight into the current state of the music curriculum of Cyprus and an opportunity for adoption of new lessons, which could be evaluated in relation to the aims of the New Music Curriculum (2010) currently being proposed. A description of the New Music Curriculum (2010) and the new proposed aims during the ERP are presented in the music education section of this chapter (see p. 23).

2.2.2.2. Information and Communication Technology

The implementation of ICT in all public schools of Cyprus is one of the most important innovations of the ERP despite being a time-consuming and very expensive program. This implementation aims to establish the use of ICT from students and teachers alike. Students must be able to use ICT and benefit from it, whereas teachers should be able to use ICT effectively in their teaching.

The programme for the expansion of ICT is divided in three sectors: infrastructure, national curriculum and teacher training (MoEC, 2008:18). Firstly, it is important that every school has at least one computer laboratory, networked and equipped with current technologies. Secondly, the national curriculum should provide opportunities for the use of ICT in the creative or learning process of education. And thirdly, teachers should acquire the necessary skills in order to teach students to use ICT in the classroom. ICT tools could prove very effective in the educational process, which is why the Cyprus Pedagogical Institute (PI) is responsible for developing and implementing

⁴ Apolytirion is the main school-leaving certificate for secondary education in Greece and Cyprus, obtained after successfully completing the third grade of Lyceum.

teacher-training programs. More than 85% of all teachers in primary and secondary education have attended training programs related to ICT (until 2012).

In secondary schools, ICT is taught as a separate subject in the national curriculum of Cyprus, whereas in Pre-Primary and Primary Schools it is not. ICT is holistically integrated within educational programmes, and can be used in problem-solving, decision-making, communication and information as well as an implementation tool for the curriculum. In order for all these dynamic tools to be used, the teachers need guidance and special training from professionals. Currently (during the ERP), a team of ICT advisors are visiting schools and assist teachers in using ICT in their teaching. These advisors are also helping teachers with specialised software on the teachers' subject area or generally using the tools of the software for effective teaching and learning. This is also true for music curriculum, as the PI introduced music software to teachers, such as the notational software of Sibelius and the music program of Audacity. Teachers can attend seminars based on such music software and can also ask for private assistance from the PI in order to be prepared to use these technologies in the classroom. This research takes into account this change and supports it as part of the music curriculum through the SbM lessons. The researcher will attempt to introduce to students and teachers ways to use music technology in the music classroom, such as utilising the Audacity software for which teachers are already trained.

2.2.2.3. Teacher Training

These innovations, especially in ICT-related areas, are inevitably combined with teachers' training. One of the key objectives of the ERP is for the teachers to have the appropriate training in order to be able to use the relevant equipment and facilities in the schools. Pre-service training of the secondary school teachers is now assigned to the University of Cyprus, not the PI. Nonetheless, in-service training of the teachers is monitored by the University of Cyprus and the PI. In-service training is also essential for in-service teachers, when adopting new technologies and tools in their teaching. It supports teachers' skills, compensating any weaknesses and enhancing their educational abilities. Another kind of training that has been introduced in the context of the ERP is the on-the-job-training, mentoring and assistance of the newly appointed teachers. The training programme aims to create a balance between theoretical and practical training (MoEC, 2009: 11).

The training of the teachers participating in this research is very important for the outcomes of the research. The researcher takes into consideration the pre-service, in-

service and on-the-job-service training of the participating teachers, before the creation of the SbM lesson plans. The teachers' training can influence the delivery of the SbM lessons as well as define the difficulty levels that are appropriate for the content of the lessons. This issue will be addressed during background questionnaires for the participating teachers (see p. 124).

2.2.2.4. Special Education

The training of the teachers is extended in matters of inclusive education, where students may have special education needs, or any disability that prevents or impedes them from using the sources and facilities of a mainstream classroom. Teachers are under more pressure than before and the need for in-service and pre-service training is of major importance. With the Education of Children with Special Needs Law (L11311)/1999), the students with special needs or disabilities can be identified, and the necessary educational resources can be established, in combination with an evaluation of their progress.

All these support an inclusive education for students with special education needs, and any implemented lesson material needs to provide an inclusive environment. Thus, inclusive education is considered an important element for the creation of the SbM lesson plans. There is a need to provide teachers with lesson plans that can support different levels of learning for the students, as well as activities that can be completed from all students including those with any disabilities.

2.2.2.5. Multicultural Education

Multicultural education in Cyprus has become one of the priorities of the MoEC. The number of immigrant students is constantly increasing and various support programmes have been created, particularly for those that Greek is not their first language. Bilingual students have additional support classes for intensive learning of the Greek language. For students that cannot communicate at all in Greek, but have enrolled in public schools, translators are employed to help them and their families communicate with the school and teachers. The ERP and the innovations that are being integrated in the educational system of Cyprus are focused on the acceptance of difference, tolerance and respect of other cultures as well as the protection of minorities, "so as to prepare all students for living in a multicultural environment" (MoEC, 2008:23). The researcher takes into account the possibility of having students that Greek is not their first language, thus the SbM lesson plans are going to have additional visual material that can guide the students throughout the activities (images, videos).

2.2.2.6. Educational System

Changes in the educational system also concern the increase of the years of mandatory education from 10 to 12, the implementation and promotion of the All-Day Unified School in Primary Education, the introduction of Mandatory Pre-primary Education and of programs for talented students in Secondary Education. These changes in the mandatory education will help the democratisation of the society of Cyprus, because it will try to eliminate social inequality (Evaluation Report, 2004: 102). However, this research does not try to evaluate the changes in the educational system, thus it is involved only with public schools which have not been affected by these changes.

2.2.2.7. Lifelong Learning Strategy

From 2007 until 2013, there has been established a strategy for lifelong learning, which is being monitored by the National Committee for Lifelong Learning. This committee is responsible for the coordination and monitoring of the implementation of this strategy, evaluating its effectiveness and formulating it accordingly in response to the changing circumstances.

The lifelong learning strategy is related to all the levels and types of education, including training. This strategy aims at making education and training systems as accessible as possible to all citizens of Cyprus without excluding those with special needs or those coming from lower socioeconomic backgrounds. It is also responsible for the improvement of education and training systems to meet the needs of the modern Cypriot citizens and for the increase of research and development activities, ensuring the active participation of all social partners.

Nonetheless, the lifelong learning strategy supports new activities and learning for adults, and this can include innovative music lessons. It is important that the SbM lessons can be used by anyone, not only by teachers in schools, in order to offer lifelong learning. If the SbM lesson plans prove to be innovative and support different levels of learning, then these might be also appropriate to be used by adults, as well as children.

2.2.2.8. Key Competencies of the European Citizens

This research project takes into account the innovations suggested by the ERP and will attempt to use these as part of the SbM lesson plans. These innovations are based on the eight Key Competencies considered necessary for Europe's citizens: mother tongue; foreign languages; maths, science and technology; digital competence; learning to learn;

social and civic competence; initiative taking and entrepreneurship; and cultural awareness and expression (MoEC, 2008; UNESCO, 2010-2011).

For this research, cultural awareness and expression are vital. To address cultural awareness and expression, the MoEC promotes educational programmes that support a unified and stronger drive for music education and music development. “The Cyprus MoEC is responsible for setting the aims for cultural and creative dimensions of education” (Pitri, 2007:1). There is a need for higher achievement of the Cyprus music education objectives, through support of the music teachers and the schools. Programmes that support music education and development are in cooperation with the Cyprus symphony orchestra, visiting artists in schools, projects bringing together different disciplines and often, regional lyceum choirs and orchestras and annual students’ contests (MoEC, 2009: 7).

The research needs to create lesson plans that can support the music teachers and guide students towards cultural awareness and expression. The SbM lesson plans need to provide the students with the opportunity to enhance their presentation skills, communication skills, develop their personalities and their interpersonal relationships as well as enhance their music knowledge. The following section focuses on the music education of Cyprus, in order to identify where and how these SbM lesson plans can be implemented and which are the requirements for such an implementation.

2.3. Music Education of Cyprus: before and during the Educational Reform Programme

In the Cypriot modern society, music education is considered important part of children’s development. Its aim is to develop mentally, emotionally, physically, aesthetically and socially every student, through the use the three most important parameters of music: composition, listening and performance.

The philosophy of the music education in Cyprus is influenced by the theories of Jean Piaget on child development and the research by Keith Swanwick and June Tillman on the child’s musical development. The spiral of Swanwick and Tillman (1986) has been used as a basis for the music curriculum in modern societies including music education in the UK, Cyprus and Greece. The spiral suggests ages that are turning points of a child’s development as composer. Each turning point represents a mode based on

theories of mastery, imitation, imaginative play and metacognition as well as on how children express and experiment with sounds and music throughout their childhood. There are four modes that seem to be the basic music developmental stages of children:

- Turn 1: With control and experimentation of Musical material (0-4) – sensory/ manipulative mode
- Turn 2: With the use of Musical expression (4-9)- personal/ vernacular mode
- Turn 3: With the experimentation with Musical form (10-15)- speculative/ idiomatic mode
- Turn 4: With personal assessment and identification of musical value (15+) - symbolic/systematic mode

(Swanwick, 1988:76)

Following these modes of musical development, the music curriculum of Cyprus is setting up the targets and aims of each year's music curriculum. This research project also follows these modes of musical development for the creation of the SbM lesson plans, in order to be able to support the music curriculum. The following section identifies the issues relating to the music education of Cyprus.

2.3.1. Before the Educational Reform Programme: Problems of the music education of Cyprus

Previous research in relation to the music curriculum of both primary and secondary education in Cyprus has led to the conclusion that there are many problems in the music education. Firstly, it was identified that the aims of the curriculum are too generalised and are not used hierarchically in order to clarify the importance of their aims and objectives (Economidou Stavrou, 2006b:32). The music curriculum is more like a statement of “wishful thinking in the educational context” (ibid) rather than a guiding tool. General statements in the music curriculum, such as “students are expected to meet, become familiar with, and use new technologies for music education”, which are presented as aims, do not provide the means of *how* teachers can do this or information about *which* technologies to use. Most importantly, in primary education the technologies available are minimal, a fact that makes targets like these utopian (ibid). As explained by Economidou Stavrou (2006b) there is:

- No coherence between the aims and content of the curriculum
- No coherence between the aims and the music activities
- No coherence between the aims and the content of curriculum and assessment tools.
- No coherence between activities and content.

(Economidou Stavrou, 2006b: 36)

As a result, the evaluation and development of the music curriculum was considered as necessary. Moreover, Rousia (Πουσιά, 2009) suggested that music education should start from an earlier age (3 years old) and support more the music education between the age of 3 to 7 years. Music education between these ages is minimal in Cyprus (Πουσιά, 2009: 27) and many schools do not have specialist classrooms for the music lesson. Moreover, the compulsory education starts at the age of 5, thus pre-primary music education does not have a music curriculum yet.

Previous research (Economidou Stavrou, 2006a) revealed that there are weaknesses not only in the music curriculum documents and structure, but also concerning the music education of the teachers. There are two problems related to teachers in the Cypriot music education: one concerns generation division and the other one training.

The first one is more general, which includes the teachers of other subjects, not only music teachers. Research revealed that the system does not support risk-taking or professional development of the older teachers, as they prefer following safe and tried solutions with no risks and this makes them less interested in professional development (Angelides, 2004). In contrast, new teachers are more willing to try new and innovative methods in their classrooms, moving away from the traditional methods of teaching. They are more “eager to learn” and search more about new teaching methods, thus having a more continuing professional development (ibid). This generation division does not affect the system in relation to promotions, which are based on years of service rather than quality of teaching and knowledge. Thus, new teachers experiment more than the older ones, and this experimentation can create possible confrontation with the parents when using new methods of teaching, other than the traditional ones (ibid).

The second problem is more specific to the primary music education of Cyprus. The fact that there are three different types of teachers who deliver the music lesson can

cause many problems and inequality of teaching in the music classroom. The three types of teachers in the primary music classrooms are:

1. The teacher with specialisation in music
2. The teacher with basic or little knowledge in music
3. The musician (with little knowledge in pedagogy)

(Πουσιά, 2009:26)

This promotes not only inequality of teaching but also of learning between students. Music teaching by non-specialists is not only evident in Cyprus, but also in the UK as well as in other countries, like Greece. This shows that there is an international phenomenon, which affects music teaching and learning in primary schools. In Cyprus, there are cases where music teaching depends on the love of some general teachers for the music lesson or in other cases general teachers are forced to teach music in their schools as a result of the above situation (Πουσιά, 2009).

As identified by Hennessy (2000), the music teaching by non-specialists can cause inequality of learning among the students but it can also lead to inattention to the subject itself and as a consequence the subject is underfunded (cited in Holden and Button, 2006: 26). In Cyprus funding for music education is provided by the MoEC, as well as from the community of each school. The Government's funding is a small amount, which is usually provided for instrument purchases, where the community's funding is usually much bigger and supports economically the cultural events of the school. In order for teachers to get more funding to support music education in their schools, they regularly present their work to the communities so that they get financial support. In areas where there is not a strong music education, lack of funding for equipment and instruments is evident.

However, Stocks (1998) reports that with the proper in-service training of non-specialist music teachers and with continuing professional development as well as with the appropriate access to resources and support from other music specialists, non-specialists could be more confident and more competent in teaching music in primary schools. Moreover, Holden and Button (2006) reported that class teachers in primary education are willing to teach all subject areas, but consider it important for music specialists to teach the music lesson (2006:36). Their survey showed that "teachers are confident in their own pedagogical skills, (but) they are less secure with music subject

matter, content and knowledge” (ibid). Training and continuing professional development affect this.

Continuing professional development for music teachers in Cyprus is regulated either by the Supervisor of Art of the Department of Elementary Education or the Supervisor of Art of the Department of Secondary Education of the MoEC as well as by the PI of the ministry. This training takes the form of seminars, which are recommended but are not compulsory for teachers. This could lead to inequality of knowledge among music teachers. Other forms of training include visiting artists, who offer in-classroom seminars for both teachers and students at the same time. Rousia (Πουσιά, 2009) suggested that there should be more participatory seminars with artists and students especially with the Symphonic Orchestra of Cyprus (2009:27) because of the strong drive towards classical music. However, in 2008 it was identified that music teaching should include **all music genres**, in order for students to choose on their own their favourite musical style/ genre (Πουσιά 2009, her own emphasis). The question is whether this is the case with music education in Cyprus?

The problems identified so far in the music education of Cyprus are:

- The lack of clear and hierarchically presented aims for the music curriculum
- Lack of coherence between the music curriculum structural elements
- Generation division between teachers
- Three types of music teachers in primary schools
- Non-compulsory training of the music teachers
- Knowledge gaps between older and new teachers as well as between music specialist teachers, general teachers and music teachers.
- Lack of equipment and funding of music in schools
- No music classrooms in all schools
- Lack of use and guide of new technologies in the music classroom
- No guided music education before primary school

(Πουσιά, 2009; Angelides, 2004; Economidou Stavrou, 2006a; Evaluation Report, 2004)

Summary of Music Education: Challenges and SbM lesson plans

This research takes into account all the above problems, which can influence the structure and content of the SbM lessons. The SbM lesson plans will be implemented in both primary and secondary schools following the modes of Swanwick and Tillman's music development spiral. Nonetheless, there is a need to create SbM lesson plans that can be taught in primary schools by any of the three types of the teachers that are able to teach music. Moreover, the researcher needs to minimise any generation division that can affect the delivery of the SbM lessons, by carefully selecting the participating teachers. As identified in the Methodology Chapter 5, background questionnaires are focusing on these areas as well as in the range of equipment and funding of the schools, the use of new technologies and the teaching of innovative material as part of the music lesson. The following section identifies the developments in the music education during the ERP.

2.3.2. During the Educational Reform Programme of the music education

During the ERP, the above problems were under investigation. Currently, (until 2015) recommendations for improvement are being made by the directors of each level (Primary, Secondary, Technical and Vocational, Higher and Tertiary Education), and the inspectors of each level in Music or Art. However, these have to be approved first by the Minister of Education, then by the Ministry Council and finally by the House of Representatives, before they are officially stated (Pitri, 2007/08:1).

Under the on-going reform project of Cyprus, the main aim of music in primary education is:

“to help students [to] gradually enter the world of sounds, develop their musical sensor through understanding and using sound sets, which is a necessary element for the development of their inner strengths and natural musical skills. In order to enjoy and create music and contribute to their own musical development and that of the community” (ibid: 6).

In addition, the general aim of the music education in the secondary education is:

“to offer students experiences based on interesting quality activities of composition, audition and performance in order to stimulate their imagination and creativity and discover themselves, find ways to

communicate with others around them and experience stronger and richer emotions” (ibid:7).

2.3.2.1 Music curriculum

During the ERP a New Music Curriculum (2010) has been developed and it will be implemented in all schools by 2015. This new curriculum emphasises on changes in the structure of the educational levels, the aims and targets of the curriculum, an enhancement of the use of ICT in the music classroom and particularly focuses on teachers’ training.

The teaching of music and the development of musical skills, knowledge and stance of the students is achieved through practical and active musical activities. As stated in the New National Curriculum document (2010), the curriculum provided is a basis for negotiation from both educators and students, and not a given recipe for negligent use. The music curriculum is open to interpretation and evaluation by the educators as well as a source of inspiration for helping them develop their own initiatives.

Structure of the New Music Curriculum (2010)

The structure of the curriculum now provides one, unified curriculum for all the levels of the compulsory music education; inclusive of the pre-primary until the first year of higher secondary education (A’ Likeiou). The curriculum is no longer divided between the departments of education, but it is grouped between the levels of education, juxtaposing the departments. This is a change based on the unification of the curriculum, reflecting the suggestions of the Evaluation Committee (Evaluation Report, 2004). The table below identifies each grade as grouped for the new unified music education.

Table 22: The unified new structure of the music education curriculum

Unified music education:
Grade 1: Pre-primary – 2 nd Year of Primary school
Grade 2: 3 rd Year of Primary school- 5 th Year Primary school
Grade 3: 6 th Year of Primary school- 2 nd Year of Lower Secondary school
Grade 4: 3 rd Year of Lower Secondary school- 1 st Year of Upper Secondary school

This research project takes into account this change and juxtaposition of the departments of education, in relation to the sample of the case studies (see p.108). The importance of this change lies in the fact that the New Music Curriculum (2010) proposes a continuation between primary and secondary school curriculum in order to create a more concrete music education. Thus, the SbM lesson plans will start from primary schools and continue to the secondary schools, supporting this unification.

Aim and key targets of the New Music Curriculum (2010)

The overall aim of the music curriculum is to offer experiences, skills and knowledge to students, in order to promote their musicality and help them communicate through it. **Listening, performing** and **composing** are still the three most important key targets of the New Music Curriculum (2010).

More specifically, these basic skills are interlinked with the overall development of the curriculum. As stated in the New Music Curriculum document (2010, section 3.3.1), **listening** should promote active listening skills to the students and prepare them to be able to recognise and/or represent with or without typical notation the music, identifying different terminologies. It is emphasized that this should be encouraged through recordings as well as live performances, in order for the students to enjoy the music and be able to express their feelings about it.

Performance, on the other hand, should be experienced through the use of their voice and/or instruments (Παιδαγωγικό Ινστιτούτο Κύπρου (ΠΙ), 2010: section 3.3.2.). Students should be able to perform individually or in groups, using their voice, body or musical instruments in and outside the classroom. As part of performance, students need to use their voice to perform songs as part of their musical training and as a skill for expressing their feelings. Thus, students' voice training starts from pre-primary school. A change between the old and the New Music Curriculum (2010) is about song

learning. In the New Music Curriculum (2010), song learning should be at the end of their voice training rather than the beginning. A new dimension is also suggested in the New Music Curriculum (2010) with the use of new technologies as part of the children songs learning, such as through the Internet, karaoke and electronic games. These recommendations are intended to provide the teachers with inspiration and ideas to enhance their teaching.

Additionally, the use of instruments as part of performance is placed at the early stages of the students' musical learning, in order to familiarize them with as many instruments as possible. The aim is for students to love and appreciate the musical instruments, and understand and respect them as means to produce music. The curriculum also supports the use of instruments inside and outside the school, in order for students to perform music and express their own ideas and creations. The national curriculum supports the use of Orff instruments and teaching methods⁵. It also promotes the use of students' individual private instruments as part of the performance teaching and the use of easy instruments provided by the school. During the first grade, the use of instruments is to familiarize the students with them, while during the second grade students are introduced to the European notation system. This supports a more detailed musical training of the students, one that supports the correct use of the instruments. During the following years of music education, the music teaching will support the development of technical performance skills for different kinds of instruments (including electronic instruments and MIDI keyboards as well as self-constructed instruments). Throughout the years of teaching performance, the Curriculum Documents state that is important for the students to record their performances, in order to be able to evaluate and accept criticism from each other in order to get better (ΠΙ, 2010: section 3.3.2.).

Last but not least, **composition** is considered as a great contribution to the music teaching in education, because it promotes students' creativity and development of their individual musical knowledge and skills (ΠΙ, 2010: section 3.3.3.). Through the activities of improvisation and composition (with voice, instruments, movement and/or technology) the students are able to develop their creativity as part of self-expression

⁵ Orff method (1920s-1930s) is the approach developed by Carl Orff and Gunild Keetman used to teach music education to students. The approach combines drama, speech, movement and music to create a comfortable environment for the students to experiment with the instruments, usually in abstract musical ways, without feeling that they are being judged.

and communication with the other students. Students experimentation with sound sources enhance their critical thinking to make the right choices for the combination of the music “ingredients”, in order to create and express the appropriate composition. Improvisation is considered a high priority, as it enhances the creativity and originality of students, thus it should be approached differently at the different age levels. It can be used as an expression of the moment without the need for evaluation and re-examination or it can be used as part of an experimentation, evaluation and change procedure for a better result (ΠΙ, 2010: section 3.3.3.).

2.3.2.2 Pedagogical methodology, assessment and procedures

The New Music Curriculum (ΠΙ, 2010) includes suggestions for pedagogical methodology, assessment and procedures. Active learning, creativity, critical thinking skills, cross-subject approaches and reciprocal teaching are presented as important part of teaching and learning of music in the New Music Curriculum (2010). All the above are taken into account for the creation of the SbM lesson plans. The researcher particularly focuses on the development of skills through active learning and creativity to support the needs of the New Music Curriculum (2010) and benefit students.

The curriculum is divided into thematic units, based on which the teacher develops the teaching material. More specifically, these thematic units provide a starting point for the teachers regarding the specific targets of the music curriculum (Appendix C). This research project takes into account the new structure of the learning material and the researcher will use thematic units to structure the SbM lesson plans as well as their sequence. The lesson plans can be combined with cross-curriculum subjects, if identified by the teachers. The New Music Curriculum (2010) particularly supports the use of projects as part of teaching music to offer knowledge through practice, not the opposite. Thus the implementation of the SbM lesson plans can take the form of a project and guide the students through the understanding, identification and creation of SbM compositions.

It is also important for the teacher to teach different levels according to individual students' abilities. The activities used in the music teaching should promote inclusiveness of all students and those with special education needs, thus the teacher should be able to promote each student's abilities, skills and talents. This research project underlines the need for inclusive education, supporting teachers with diverse material and activities of different levels. The SbM lessons will be designed to enhance

the aims of the New Music Curriculum (2010) and support teachers in providing an inclusive education.

In spite of the fact that the music curriculum is changing in its entirety, the emphasis given to the music tradition of Cyprus and Greece remains. The New Music Curriculum (2010) supports the involvement of the students in the traditional music of the island, in order to strengthen the feeling of cultural heritage. This can involve musical activities of traditional compositions and performances as well as the exploration of traditional music using technology. Visiting Cypriot composers can also enhance this cultural awareness of the students, either by personal communication with the students or by the exploration of compositions that are composed for Cyprus. The national problem of Cyprus, the war between the Greek-Cypriot and Turkish-Cypriot communities has been used numerous times as a theme for Cypriot songs and compositions. The researcher identifies that a strong connection between students and SbM can be created if the students can reflect on compositions that use SbM to explore the national problem of Cyprus. Therefore, as part of the SbM lesson plans, a SbM composition dedicated to the Cypriot national problem is going to be used for encouraging students' attention towards the use of music to explore cultural and social issues (Teacher's Information Pack: Lesson 8).

Additionally, all the above strategies proposed for the teaching of the three key areas of music education, listening, composing and performing, follow the "Constructivism" method of teaching. The New Music Curriculum (2010) supports "Constructivism", as this teaching method bases new knowledge on the existing knowledge of the students and helps them observe and define the new characteristics that constructed this new knowledge. The aim is for the student "to learn how to learn" (MoEC, 2009:6). The teaching is child-centred and is supported by the teacher. The constructivism method guides the creation of the SbM lesson plans in conjunction with other educational theories, and supports a child-centre education (see p. 70). The material presented to the children and the teachers is also based on the previous knowledge of the students. Thus, the lessons are presented as a continuum and it is essential to follow the specific order of the lessons and not to be taught in a random order. Within these SbM lesson plans there are lessons which utilise ICT, thus the following section explores how ICT is implemented in the music classroom, and how this affects students and teachers.

2.3.2.3. ICT in the music classroom

For the establishment of a modern music curriculum, the use of ICT is an integral part. The engagement of the students with electronic instruments, the use of computers and telecommunications in music are all part of the targets of the New Music Curriculum (2010). The use of ICT should promote, among others, critical and creative thinking, through improvisation and exploration. ICT offers opportunities for cross-subject teaching, creativity, communication and self-expression. Especially in the early years of music teaching, when students are not able to write music notation, the use of ICT can help them compose music. It is worth mentioning that ICT can enable students with special education overcome any constraints arising from the traditional methods of teaching music, such as learning an instrument (see p.80).

In order for the integration of ICT in the music classroom to be pragmatic, the teaching environment should be appropriately transformed. The appropriate music classroom, or as referred to “the true music laboratory” (ΠΙ, 2010, section 5), should be spacious, with a variety of musical instruments and computers with the appropriate equipment and software, suitable to accommodate no more than 18 students at a time. In the New Music Curriculum (2010) there is a section dedicated to teaching with ICT, providing also teaching material, supporting websites and subject areas. The research particularly focuses on the use of ICT in the music classroom and tries to implement SbM lessons that can support its use and support the initiatives of the New Music Curriculum (2010).

2.3.2.4. Training of the music teachers in relation to the New Music Curriculum (2010)

The training of the music teachers is now designed to familiarise them with the New Music Curriculum (2010) document’s aims and targets, in order to prepare them for the music classroom. All the teachers taking part in the training will have a supervisor as well as the help of the Music Inspectors at any given moment. With their guidance the teachers will have the chance to choose a thematic unit and teach it in the school in order to understand the new philosophy of the New Music Curriculum (2010) (Υπουργείο Παιδείας και Πολιτισμού, 2011: 24). The new thematic units included of the New Music Curriculum (2010) can be found in Appendix C. From 2011 until 2015 all the thematic units presented in the New Music Curriculum (2010) should be introduced in all levels of the secondary education. Training is provided to the teachers throughout the academic year but, as reported above, not all training seminars are compulsory.

2.3.2.5. New Music Curriculum (2010) targets

It is important to identify the **main targets** of the music lesson from the 1st to the 4th Grade, as outlined in the New Music Curriculum (2010), as these will guide the creation of the SbM lesson plans. The aim of the SbM lessons is to incorporate most of these targets and enable these outcomes to be achieved. The targets are:

- Development of active listening skills
- Development of voice skills
- Development in the performance of musical instruments
- Development of improvisation and composition skills
- Acquire knowledge and skills in order to read and identify different kinds of notations
- Acquire knowledge on the basic musical terms (rhythm, melody, structure, texture, dynamic, speed, annunciation...) and different ways in which these are used and linked with different musical styles.
- Acquire and enhance positive attitudes towards listening, performing and composing.

More specifically, in primary education the students are expected to:

- Develop their acoustic ability
- Sing correctly and with pleasure
- Learn music symbols and use them to reproduce and create music
- Express their inner selves by reproducing and creating music in the level of their abilities in multiple ways for personal satisfaction and communication with others
- Be introduced and understand the basic elements and concepts of the theory, morphology and history of music
- Enjoy, respect and accept good music and seek listening to it
- Be introduced to and develop respect towards (the Cypriot) national musical tradition, recognize its role and present presence and also preserve and disperse it
- Appreciate the music heritage of other countries
- Develop their ability to assess and select composition from folk and light music
- Develop their individual musical skills
- Connect music to other subjects of the curriculum

- Use music to develop and collaborative spirit, responsibility, discipline and communication
- Be introduced to, familiarize themselves with and use contemporary technology in aspects of music

In secondary education, the music curriculum's aims are the:

- Use of materials and means for developing technique and skills through investigating sound, use of voice and use of instruments;
- Expression of emotions, ideas, thoughts and solutions to musical problems through creation and musical planning, communication and musical presentation;
- Evaluation and recognition through observing, auditing, describing and reacting

(III, 2010, section 7)

Moreover, music activities that promote collaborative work and problem-solving provide students with equal opportunities. However, there are currently no cross-curricular links between the arts (art and music subjects) or any other subjects of the curriculum, but this issue should be addressed in the future. The SbM lesson plans will attempt to identify cross-curriculum links with other lessons, in order to give the opportunity to the teachers to find applicable use of these lessons in other school areas. These cross-curriculum activities can be used to promote SbM as an important element of the curriculum. The importance of ICT, as part of the music curriculum, is also emphasised through the aims and targets that support the use of contemporary technology in different aspects of music. This particular innovation of the New Music Curriculum (2010) deserves a section of its own, as it is considered a major step towards modernizing the curriculum, not only in Cyprus, but also globally. The following section investigates the use of ICT as part of education, identifying the issues of such an innovation and its benefits as part of the music curriculum.

2.4. ICT in education and issues:

The update of curriculums proved critical to the increased use of ICT in educational settings internationally. "School systems...face the imperative to provide students with the necessary technological skills to survive and hopefully thrive as citizens in the information society" (Selwyn and Husen, 2010). Education must support the needs of modern citizens, encouraging the development of ideas and critical thinking of active students and in this context the Cypriot education should promote the incorporation of ICT in the music curriculum.

The importance of ICT in education has been supported with much research, offering insights for its effectiveness, learning outcomes and even possible restraints for both teachers and students (Bonnett et al. 1999; Selwyn and Husen, 2010; John and Sutherland, 2005). As a result, two opposing thinking groups in relation to ICT have been created: the one supporting the implementation of ICT in the classroom (Granger et al. 2002, Muirhead 2007) and the other one criticising ICT (Postman, 1993; Roszack, 1986).

Prensky (2001) in his highly influential paper "Digital Natives, Digital Immigrants" defences the use of ICT in education, as fundamental to the students' lives:

"Today's students... represent the first generation to grow up with this new technology. They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all other toys and tools of the digital age" (2001: 1).

ICT and new technologies in education are of key importance for students' lives and essential to education. This identifies that "[o]ur students have changed radically. Today's students are no longer the people our educational system was designed to teach" (ibid), thus leading to an essential curriculum renewal, that supports ICT.

It is essential for middle and early secondary school education students to link school learning with their real-life outside of school. Martin (2010) suggests that "if the school learning is viewed as meaningful to their daily lives, students will remain interested in that particular learning well beyond the school years" (2010:1).

Moreover, teachers have a central role in the use of ICT in education. The efficient use of ICT in the classroom is closely linked to teachers (Condie, 2007; Hagreaves 1999; Martin, 2010). The teachers' abilities and knowledge influence the efficient use of ICT. Lack of knowledge and training of teachers in ICT affects its use as plain "tool" for

teaching, without identifying its creative potentials and educational benefits (John and Sutherland, 2005; Martin, 2010).

Research has been conducted in many educational systems and across various subject areas with view to identify the educational implications of ICT. Specifically, in the UK, one of the most important research projects, which examined the influence of ICT in education in different subject areas including music, was the “InterActive Education Project” (2001-2004). This project was a “unique partnership between university researchers, teacher educators and teachers, who worked together to find out how ICT can be used in schools to enhance learning” (John and Sutherland, 2005: 405). It was one of the “largest ICT and education research projects that had ever been undertaken in the UK” (InterActive Education webpage). This project examined the ways ICT could be used in educational settings in order to enhance learning and teaching.

Nonetheless, the InterActive Project is not the only research concerning ICT and music education. Other researchers have investigated the implementation of ICT in music education, in order to reveal benefits (Beckstead 2001, Gall and Breeze 2005, Pitts and Kwami 2002, Reynolds 2003, Savage 2005 & 2007) and/or restrains (Higgins 2007, Gall and Breeze 2007, Williams 2000, Dale 2004, Cain 2004) of this implementation. The initial question, which arises while technologies are transforming educational systems and curriculums, is whether technology will transform music education? (Beckstead, 2001:44).

2.4.1. Issues related to music education and ICT

2.4.1.1. Flexibility of teaching with ICT

In relation to the incorporation of ICT in the educational system of Cyprus, several issues arise. Firstly, flexibility offered in programs and their enrichment with educational technologies create an environment of “voluntarily” teaching with and through ICT, where the need for inclusive education is affected by ICT use, equipment, environment and teachers’ training. The following section investigates these issues in the context of both general and music curriculum.

The flexibility of the curriculum offered to the teachers has dichotomised the role of ICT, especially in music education. Specifically in the New Music Curriculum (2010), it is clearly stated that it “is considered as a framework for negotiation, from both educators

and students and not a given recipe for uncritical application” (MoEC, 2010: section 2). With this statement, the curriculum content is left to the discretion of the educator (mostly), who is free to choose and use any parts of the curriculum, including that of ICT.

To support this statement, in the sections of the curriculum outlining the activities during the music lesson, it is stated that composition can be explored through the use of “voice, instruments and/or use of technologies” thus giving the choice to the music teacher to use technologies in the music classroom (MoEC, 2010: section 3.3.3). This contradicts to the following section 4.12 of the New Music Curriculum (2010), which specifically outlines the importance of ICT use in the music education teaching and learning, offering creativity, communication, cross-subject teaching, inclusiveness and critical thinking, together with an additional appendix on ways of implementing ICT as part of the music teaching and learning. However, in the detailed outlines of each year group, the section, outlining the use of ICT in the music classroom, is placed in brackets, a fact that suggests that it is based on the teachers’ confidence, willingness or knowledge for its implementation.

2.4.1.2. Teachers’ resistance

The outline of the New Music Curriculum (2010) is either showing a deep understanding for the major task of implementing ICT in [music] education (Casey, 1996:13) or it is just identifying some of the issues regarding the use of ICT as a creative tool in the music classroom. Thus the choice of implementation of ICT is given to the teachers.

The teachers are considered as the driving force to promote change, especially when this is based on implementing ICT (Crook, 1994). They need to have a degree of control over the change, in order to promote it and engage with new innovations (ibid). When change lacks the teachers’ support, they are usually cautious and this is often being mischaracterised as “teacher resistance” to change (Dawes 2001, Huberman 1993, Agalianos et al. 2001, Hargreaves 1994).

As supported by Hargreaves and Hopkins (1991), teachers not promoting change are not an unusual phenomenon. There are many issues relating to their resistance, one being that the innovation is a continuous change process, which involves evaluation, and if it fails, teachers are usually blamed for it (Fullan, 1982:107). Moreover, their resistance, especially for the use of ICT as new innovation, can be attributed to the fact

that it has not yet proven to be beneficial in all situations, including music education, and it is not time-efficient for teachers to adopt it without having strong evidence.

Another major issue that affects teachers' decisions concerning ICT implementation is that policy makers promote change without first consulting the teachers (Ruddock, 1990). "Hence, if teachers are not part of the decisions made on their behalf, like ICT implementation, they may find it difficult to be enthusiastic about proposed change" (Younie, 2007: 57). As discussed by many scholars (Hargreaves and Fullan, 1992; Casey, 1996; Huberman, 1993), sometimes when policy makers do not consult with the teachers, many of their ideas might be impractical in the classroom, thus being unrealistic. In order to avoid this pitfall, the present research project will support the teachers' opinions in relation to the lessons, choosing an action research methodology as will be identified later (see p. 105).

2.4.1.3. *Shulman's knowledge bases*

The idea of implementing ICT in music education, or in any other educational context, should be based on the understanding of the major efforts that should back this change. This is identified in previous research, such as the InterActive Education Project (2001-2004).

The InterActive Education Project (2001-2004) identified music education as a potentially important area for investigating ICT use. In this specific subject area, the overall "aim of the project was to examine ways in which ICT can be used within the classroom to enhance skills in composing, performing, listening to, understanding and appraising music" (Gall and Breeze, 2008: 27). The research conducted in the UK, in seven schools, three primary and four secondary, with seven educators teaching music. One of the results of this research was the fact that in order for ICT to be used in the music classroom, pedagogy needed re-conceptualisation; "it was not enough just to 'bolt-on' ICT to existing units of work and lesson structures" (Gall and Breeze, 2007: 53).

As identified by Kerr (1991), ICT cannot be assumed as a plain tool, which can be just used in any educational context. For music education in particular, when this happens, ICT becomes "mere 'tool(s)' with limited application" (Martin, 2010:2) and especially in composition, as argued by Beckstead (2001:44) "although technological advances make composing easier, music educators tend to use these tools to make traditional methods more accessible rather than explore new possibilities in composing".

The implementation of ICT in music education, and in general any subject area, is more than change; it can be considered as innovation (Younie, 2007:58). Innovation was defined by Somekh (1996) as “any activity or practice which involves human beings in changes to established routines” (1996:115). This change takes place in multiple dimensions, which Fullan (1991) identified as: “a change in attitude, classroom practice, and in the knowledge base possessed by teachers” (Younie, 2007:58).

Concerning knowledge bases of teachers, Shulman’s work has been identified as central for the “importance of teacher knowledge in relation to classroom practice” (Gall and Breeze, 2007b:43). Shulman (1987) classified the knowledge bases required by teachers in order to promote students learning. As adapted by Shulman (1987), Gall and Breeze (2007) summarised these in:

- “Content knowledge;
- General Pedagogic Knowledge (the broad principles and strategies of classroom management and organisation which appear to transcend the subject matter);
- Curriculum Knowledge (the materials and programs used by the teachers as ‘tools of the trade’);
- Pedagogical Content Knowledge (a combination of content and pedagogy);
- Knowledge of Students (including their characteristics);
- Knowledge of Educational Contexts (the workings of the group, classroom or school; regional and national situations; the character of communities);
- Knowledge of Educational Ends (purposes and values; historical and philosophical roots of teaching and learning of the subject)”

(Gall and Breeze, 2007:44).

The importance of the knowledge bases of teachers lies on their effect over students’ learning. The InterActive Education project was based on the Pedagogical Content Knowledge of the teachers, focusing on the development, teaching and review of the Subject Design Initiatives (a unit of work). These Subject Design Initiatives (Triggs and John, 2004) were based on a composition area of the music curriculum, either primary or secondary, chosen by the teachers (Gall and Breeze, 2007). The Pedagogical Content Knowledge of the teachers is significant, as it affects their organisation and presentation of concepts, topics or issues, while the content and pedagogy knowledge of the teachers have an effect on the use of ICT in the music classroom (ibid: 44).

Influenced by this, during the project there was a need for “re-conceptualization of existing pedagogy” (ibid: 53). Eloy (1992) states that advances in technology are leading towards an approach in music pedagogy, which is vitally different. Cain (2004) identified areas that need development, such as the “teaching styles and the role of the teacher” (2004:216). Teaching a whole class was replaced by teaching students in groups and has moved on with students learning or working in pairs or individually on a computer. These are considered as practical implications of ICT.

Cain (2004:215) supports that a new theory must be generated for music education, due to the advances in music technology. ICT has changed conceptual frameworks that were once considered facts. He suggests that curriculum development is inevitable, as both practical and theoretical changes are needed to support the new technologies (2004). Supporting this statement, Koehler and Mishra introduced the handbook of Technological Pedagogical Content Knowledge (TPCK) for teachers in 2006. As they argue, it is an addition to Shulman’s knowledge bases, which creates a framework for teachers’ knowledge in relation to technology integration. TPCK is considered critical for effective teaching with technology, as the teacher is the basic factor that influences the appropriate (or inappropriate) use of technologies in the classroom. The TPCK framework not only supports teachers in introducing technologies in the classroom, but also suggests that more emphasis should be given on teachers as curriculum designers (Koehler and Mishra, 2008).

2.4.1.4. Teachers’ background

Supporting the view that teachers’ knowledge bases are essential to the teachers’ abilities to implement ICT in order to promote change, it should therefore be noted that all music teachers should have the same basic levels on these knowledge bases. Unfortunately, this is not possible, as the teacher’s background feed these knowledge bases. Especially in the music educational context of Cyprus, there are three different kinds of music teachers: the teacher, who is specialised in music and chooses to teach music in primary schools, the teacher, who has just an informed background in music and is usually obliged to teach music in primary schools and the musician, who is trained as a professional musician and has little pedagogical background (Πουσιά, 2009). In other countries, such as the UK, there is also a distinction between the music teacher and the music technology teacher (Pitts and Kwami, 2002: 61). It is only recently that music technology teachers are considered as specialised music teachers. However, in Cyprus, music technology teachers are not yet considered as eligible to

teach subject music in state schools, and are currently employed in private schools and universities only.

This imbalance in teachers' knowledge bases, informed by their various backgrounds, has an impact not only on the introduction of ICT in music education, but also the adoption of innovative practices as part of music teaching (Holden and Button, 2006: 23), such as SbM. The same debate emerged in the early 1980s in the UK about "whether or not music should be taught by a specialist or non-specialist" (ibid). In the UK there should be a music co-ordinator, who is guiding and supporting the music non-specialists, but there is not always one in each primary school.

There is no unanimity on the issue of the appropriateness of non-specialists to teach music. Reports from previous surveys supported the teaching of music in primary schools from the class teacher because he/she might be "in a better position to ensure that the curriculum 'matched' each child's intellectual ability" (Allen, 1988:217). However, in subsequent reports, the need and the importance of practical music activities was emphasised and it was claimed that they should be supported by a specialised music teacher or by a music co-ordinator.

There are issues arising when music is taught by non-specialist teachers, not only due to lack of subject knowledge or expertise, but also due to low self-esteem and confidence to fully implement the music programme (Lawson et al, 1994:3). There is also an expectation that the teachers will suggest music models, develop music critical thinking and curriculum but also will be familiar with music techniques and practices, before introducing them to the children (Rainbow, 1996: 10). In-service training can help non-specialists gain the confidence needed through access to the appropriate resources and in-class support from music specialists or music co-ordinators. "This will allow enhanced opportunities for the professional development of the class teacher" (Holden and Button, 2006:26).

The research conducted by Holden and Button (2006) showed that the initial training of the non-specialist music teacher could enhance and develop his/her subject knowledge. Unfortunately in Cyprus this is not always the case, as the class-teacher is not obliged to undergo any training on music teaching, before teaching in schools. The above issues, in combination with the implementation of ICT as part of music teaching, reveal a gap, created by the lack of knowledge on both music subject teaching and music teaching implementing ICT.

Teachers' background can be critical for the delivery of the SbM lessons, thus the researcher will consider the background of the teachers before the creation of the lessons. Also, in order to identify if the teachers' background can influence the teaching of SbM, the researcher will create a sample of participating teachers from all three types of teachers that can teach music in the Cypriot music classroom.

2.4.1.5. Professional development for ICT teaching

In order to teach there is need to know *how* to teach; thus teacher training and professional development are essential for the implementation of ICT in the music classrooms.

The most important issue in relation to ICT in music education is the need for professional development and technology training, which provides a thorough understanding of hardware and software (Bauer et al, 2003: 290). Professional development, as defined by the Institute of Management (1995), is "the process of planned, continuing development of individuals throughout their career", including "elements of professional and personal development, the acquisition of knowledge and the enhancement of skills" (1995:5). It is identified that technologies, such as ICT, can contribute to the development of new approaches to music learning (Williams and Webster, 1999). Especially the Internet is considered particularly significant for the enhancement of music teaching and learning with ICT.

However, recent studies illustrated that teachers do not use ICT in order to enhance learning, but rather for administrative use and school-related purposes (Reese and Rimington, 2000). It was also found that less than 30% of teachers used computers during class time with students (ibid). As a consequence, in Reese and Rimington's (2000) research, it was revealed that 94% of the teachers asked for further training in new technologies, while in a national study by Taylor and Deal (2000) it was discovered that "more than 90% of music teachers were willing to participate in technology training" (Bauer et al, 2003:290). Having these results in mind, it is obvious that music teachers need further training and assistance in order to reach the required levels of ICT implementation in the music classroom.

A point of controversy among music teachers concerns the "tension between those who believe that computers should help teachers do their jobs as they do them *now* and those who see computers as redefining teachers' roles in the future" (Pitts and Kwami, 2002:61). It is not clear whether music teaching using ICT creates a positive reaction as

supported by the hardware companies, or a negative reaction, adding pressure to the music teacher for technical mastery of ICT which in turn leads to the use of it in non-musical aspects (ibid). This debate is created due to the lack of professional development of the music teachers. Scaife and Wellington (1993) suggest that for a classroom practice to be successful it should be “shaped by IT rather than considered *prior* to it” (1993: 45). To be possible for music teachers to shape their classroom practice with ICT, they should have the appropriate training in advance. In previous years, English agencies, such as the British Educational Communications and Technology Agency (BECTA), used to deal with the teaching of music and developed special material for teachers, for example the Curriculum Information Technology Support (CITS) (1998-2010: closed by the UK government) and the Music Technology in Action Pack (closed in March 2011). In the past, the New Opportunities Fund (NOF) also offered training for staff, in order to “perceive the real potentials of ICT in musical composition” (1998-2002) (Pitts and Kwami, 2002:70).

However, in Cyprus, the training of the teachers is the responsibility of the PI, which is under the authority of the MoEC. During the Educational Reform Programme, the PI, in an attempt to support the new educational developments in the Cypriot educational system, launched the Educational Technology Department concerned with specific seminars of ICT in various subjects of the curriculum. This training includes conferences and workshops, development of supporting training material with learning proposals for the integration of ICT in education and educational and technical support during participating programs in the PI.

“The Educational Technology Department implements continuing vocational training in ICT, investigates and recommends new application and promotes educational innovations involving the use of new technologies in education. It also provides pedagogical and technical support, for the effective use of ICT”

(Pedagogical Institute webpage: Department of Educational Technology)

The professional development of the teachers can also be considered to be of critical importance for the effective implementation of the SbM lesson plans, as this music is considered contemporary and constantly changing, following the progress of music technologies. Thus, the research will identify the professional development of the teachers through the use of questionnaires, in order for the SbM lesson plans to correspond with the knowledge and skills of the teachers (see p. 124).

2.4.1.6. Sub-cultures affecting ICT implementation in the music classroom:

Teachers' professional development is not the only restraint that affects the use and effectiveness of ICT in the music classroom. As argued by Bernstein (1971), for each subject there are subject cultures or communities, which inform the nature of teaching and learning as well as that of knowledge. Thus, the sub-cultures that exist in each school or community or classroom affect the implementation and use of ICT (Gall and Breeze, 2007:43). Goodson and Mangan (1995), in their study of the effects of computers in various subjects that took place in secondary schools of Ontario, defined sub-cultures as "the general set of institutionalised practices and expectations which has grown up around a particular school subject and which shapes the definition of that subject as both a distinct area of study and as a social construct" (1995: 615).

This shows that each educational setting is different and requires special consideration as a separate unit. In addition, this contradicts with the MoEC's idea about a unified curriculum, as the sub-cultures affect the subject teaching and learning. Therefore, during this research the sample will include different types of schools and teachers, with a view to investigate the effectiveness of the lessons in different educational settings.

Previous research, which identifies this, was again Gall and Breeze's music research as part of the InterActive Educational Project (2007). The project was based on theories of sub-cultures, based on Bernstein (1971) and teachers' knowledge bases, building on Shulman (1987). According to Bernstein's theory (1971), the impact of computers creates sub-cultures within the classroom, which the teachers are responsible to negotiate in their teaching, learning and the use of new technology (cited in Gall and Breeze, 2007: 43). The initial results of the InterActive Education project covering the period of 2001-2004, concerning the music subject, revealed key themes which related to the subject's sub-culture when using ICT (Gall and Breeze, 2007: 53). These key themes are:

- The 'low status' of music and its effects on music and ICT
- 'Music for all'
- Pedagogical change with ICT

(ibid)

Concerning these initial results, the identified issue of music's 'low status' as a subject, influenced the provision of ICT in the music classroom in terms of "equipment,

finances, and time” (ibid). In spite of this, it was identified that ICT could offer ‘music for all’ to all students, beyond instrumental or notation skills. These two key-themes informed the third, in which it was detected that there is a need for re-conceptualization of the existing pedagogy and consideration of the “relationship of ICT work to the pre-existing ‘traditional’ curriculum” (ibid).

2.4.1.7. Physical restraints

Research investigating the implementation of ICT in the music classroom has not only identified issues concerning the teachers’ background, professional development and knowledge bases, but also physical restraints. Higgins (2007:74) found that “the potential obstacles are numerous: the size or configuration of physical space, ... the quality of sound reproduction equipment, available time, institutional focus, students’ prior experiences, and many more”. Subsequent research results confirm Higgins concerns (Gall and Breeze, 2007; Crook, 1994; Innes, 1997).

The initial results of Gall and Breeze research (2007) revealed that even after the implementation of ICT in the music classroom, there are still several issues concerning teaching and learning, such as equipment, finances and time. The research of Innes (1997), investigating the use of music technology in Key Stage 3 (KS3), revealed the same constraints of equipment, finance and technical problems, but also identified that the class size is also an issue.

According to Crook (1994:11-14), there are three main ‘pressures’ that influence teachers’ perceptions on the use of ICT in the classroom. These are sociological, economic and pedagogical. Sociological pressures are based on the notion that computers are usually used by individuals for private works. Pedagogical pressures relate to the perception of teachers that they lack technical skills and knowledge in order to teach with ICT. Economical restraints are based on the lack of financial support for equipment, such as hardware and software.

Economical restraints, even if perceived as the least of the issues, are actually important, because they affect the equipment available in the music classroom. Without the appropriate equipment teachers face even more problems in implementing ICT (Innes, 1997). The choice of equipment, including hardware and software, is as important as the teaching itself. If the equipment is not designed for pedagogical use and does not support educational context, then it could be “extremely complex and children

can easily get lost in them, causing great frustration and ... detracting from musical learning "(Innes, 1997:9).

Kassner (1998) supports that funding is available for ICT in the music classroom; "Money is available for music technology if teachers know where to look and how to ask for it" (1998:30). When funding from the government is inadequate, as Kassner supports, a teacher can find the funding he seeks either from districts or school's Parent-Teacher Association or any local foundations. In Cyprus, limited funding in music is available from the Government each year but it is worth mentioning that the PI, in collaboration with the MoEC during the ERP, is trying to equip all music classrooms with the basic equipment, such as a computer and music software, in order to promote the ICT implementation in the music classroom (Pedagogical institute webpage: research). In addition, the MoEC of Cyprus is making efforts for each state school to have a specifically transformed music classroom, with the appropriate instruments and equipment. During the previous years, the number of students for each class was also downsized to 25 students at a time. Finally, concerning the "time" spent on ICT in music teaching and learning, the New Music Curriculum (2010) does not assign any specific time limits, leaving it to the judgment of the music teacher.

These issues are going to be taken into consideration before the creation of the lessons, as the researcher acknowledges that there can be equipment problems and time issues. The SbM lesson plans will be created based on the available equipment in the music classroom and the teachers' available time for lessons that are not included in the New Music Curriculum (2010).

2.4.1.8. Music theories and practices change

The implementation of ICT in the music education, as identified and discussed above, is recognised as an innovation in the context of educational change. However, this innovation faces mostly technical issues of implementation, and background knowledge of teachers for using ICT in an ideal level. In the UK, ICT developments have informed curriculum changes, strengthening the "practical" view of the curriculum. New technologies have enabled students to create music that they cannot physically play (Odam and Paterson, 2000:19) through the use of hardware and software.

However, for music teachers this meant changes in "teaching styles and the role of the teacher" (Cain, 2004:216). Cain (2004) argues that "advances in music technology have undermined some of the most basic conceptual frameworks we currently possess"

(2004: 215) such as teachers working with the whole class or being able to effectively use equipment. The music teacher shifts from the previous concept of whole-class teaching to either students working in pairs or individually. In addition, the use of ICT requires teachers to be “technicians, performing regular maintenance and careful management of resources” (Odam and Paterson, 2000:35).

Another issue identified in the UK is the assessment of public examinations of music, for example in notation of compositions (Hodges, 2001). The technological impact on students’ work makes it very difficult for the judges to examine if the work presented is the student’s. Cain (2004) supports that this issue of assessment can be detected also in performing; in some cases students prefer music technology to ‘live’ performance (2004: 217).

Cain (2004), grounding his hypothesis on these practical changes, supports that these changes “have brought into question some of the most basic conceptual frameworks that have undermined music teaching” (ibid). Swanwick (1979) classified the core musical activities as follows: composing, performing and audience listening/audition, with the support of literature studies and skill development. The English national curriculum has been largely influenced by this classification, basing its programmes of study in the areas of performing, composing and listening skills, as separate activities. The Cypriot national curriculum also bases its music programs in these three areas.

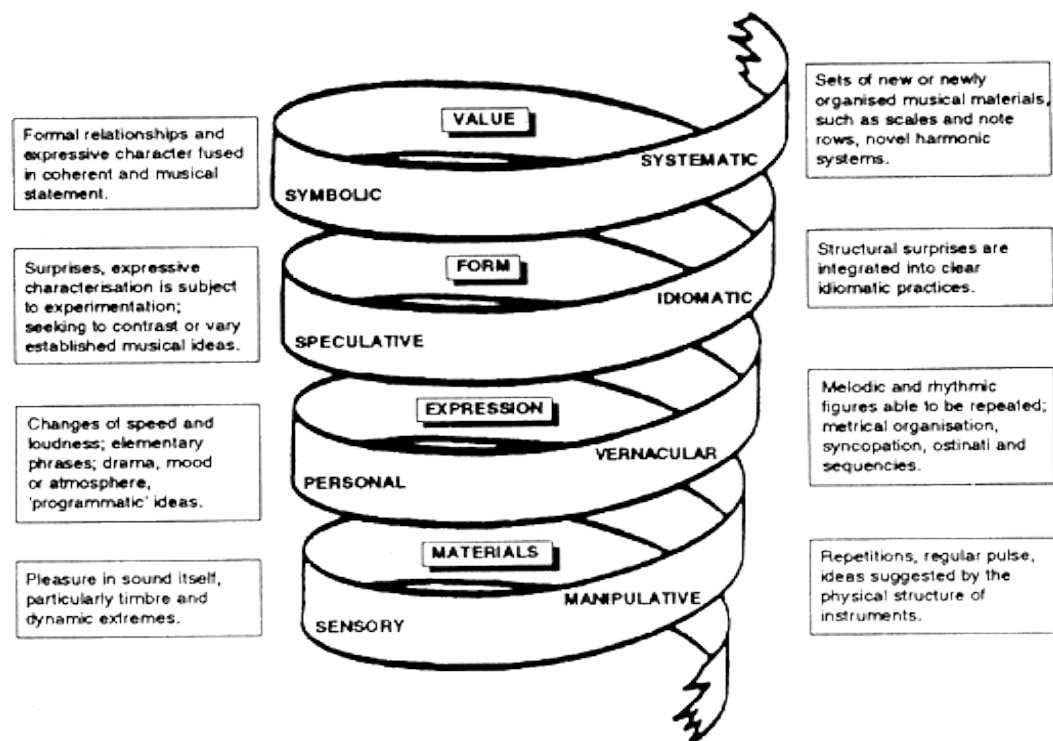
However, the implementation of ICT creates environments that use combinations of these activities, such as musical software, which presents listening examples and provides opportunity for the student to compose. “None of these classroom activities can be simply classified as composing, performing or audience-listening; neither are they primarily concerned with skill development or literature studies” (Cain, 2004:217). Questions arise where ICT activities fit under these three classifications.

“Does the term ‘composing’ include manipulating sound samples composed by other people? Does ‘performing’ include entering performance parameters in ‘step time’, before the sounds are heard, rather than as they happen? And how are we to understand recording and mixing tracks- is this simply an extension of audience-listening? What is the relationship between performer and listener, when the performance is mediated by a computer?”

(Cain, 2004: 217-218).

Nonetheless, except Swanwick's classification of musical activities, his work with Tillman (1986) on the development of musical ability has also influenced the national curriculum of Cyprus. In the music curriculum of both UK and Cyprus there are assigned levels of music composition, influenced by Swanwick and Tillman's (1986), music development spiral. The Swanwick and Tillman model was the result of their research on observations of several hundred compositions of children that Tillman taught (ibid). Their article "The sequence of musical development: a study of children's compositions" in 1986 described the spiral (figure 2.1) based on theories of psychological concepts of mastery, imitation, imaginative play and metacognition (see p. 17). However, these "turns" in musical ability seemed to be blurred when using ICT. Thus, Cain (2004) argued that the music programs of the curriculums must change and in general he considers that "curriculum change is necessary if the world of the classroom is to keep pace with the world outside" (2004:219).

Figure 2.1: Swanwick and Tillman's spiral of children's musical development



(Swanwick, 1988)

2.4.1.9. Music inside and outside of the music classroom

Keeping 'up-to-date' with the music outside the music classroom is necessary, as teachers must be informed for the musical tastes of their students (Lamont, et. al, 2003). Crow identifies that there is a problem in "music education's inability to address the increasing gulf between 'school music' and 'out of school music'" (Crow, 2006:122). Gall and Breeze (2007) identified that "teachers knew little about students' ICT musical activities beyond the classroom" (2007:53), which influenced the students' style in composing. ICT implementation benefits teachers' attempt to bridge the knowledge gap between music inside and outside the music classroom. New technologies in the classroom should be used in a creative way to attract students' attention. Although it has been indicated that teachers show a positive attitude towards popular music and attempt to use them in the classroom, they still use traditional teaching strategies (Green, 2002). As a result, new genres of music, such as SbM, remain outside the music classroom.

The research of York (2001) has shown that many teachers with classical background are usually less experienced with other musical genres. This is particularly problematic, since most of the secondary music teachers have been trained on the Western classical tradition (Lamont et al 2003:230). In order to avoid this distinction of 'music at home' and 'music at school' (ibid), teachers must promote "active music-making" using a variety of styles and genres, enabling students to "assert a degree of ownership over their music-making" (ibid: 239).

Hodges (2001) suggests that ICT should be used "as a means to achieve a musical outcome, engaging aesthetic responsiveness" (2001:179). This view is supported by Bray (2000), who states that "ICT helps because it enhances creativity, makes learning easier, encourages exploration and independence and involves appropriate learning objectives (2000:93).

2.4.1.10. Creativity and ICT

Applying new technologies in school, with view to support and develop music teaching and learning, influence the way students use technology at home; this should be the primary aim of music teachers who want to "extract" creativity.

"Whether seeing creativity being in relationship *with* technology or creativity as emerging *through* technology, both vantage points are essential to genuinely fostering music learning" (Burnard, 2007:39).

There have been many studies exploring music creativity with the use of ICT in the music classroom, (Savage 2005a, 2005b, 2007, 2009; Gall and Breeze, 2005, 2007a, 2007b; Crow 2006, Pitts and Kwami 2002, Reynolds 2003, Innes 1997). Most of these studies are concerned with the general implementation of ICT in the music classroom, exploring the creativity ICT can offer in enhancing learning following 'traditional' approaches.

For the purpose of this research, 'traditional' approaches to ICT in music technology include: the use of electronic keyboards or other electronic instruments, the use of MIDI (Musical Instrument Digital Interface) and notational software. The reason for this separation is primarily in relation to the 'traditional' model of music education, which is concerned with "inducting children into the aesthetic of western art music" (Spruce, 2002:11). The previously mentioned ICT approaches are thus considered 'traditional' when used to enhance this 'traditional' notion of western art music, which is usually the case.

Only a limited number of research projects has utilised the potentials of SbM strategies in the teaching of composition and performance using ICT (see p. 56). Going back to the initial question of whether technology will transform music education (Beckstead, 2001:44), transformation includes change, which is closely related with innovation. In order to offer transformation and promote innovation as part of creativity of ICT in the music classroom, new approaches must be identified, which go beyond the 'traditional' ones. Beckstead (2001) is concerned with the limited creative uses of ICT in music education, mainly based on 'traditional' approaches and he continues:

"although technological advances make composing easier, music educators tend to use these tools to make traditional methods more accessible rather than explore new possibilities in composing" (2001:44).

Music education should identify innovative approaches of using ICT beyond the traditional ones, in order to attract students as well as promote creativity in the music classroom.

2.4.1.11. Innovation and ICT

Breaking the 'mould' of 'traditional' use of ICT in music education could enhance not only creativity in the music classroom, but also acknowledgement in "the many ways in which music is perceived, experienced and created" (Spruce, 2002:22).

Wright (1992), Beckstead (2001), Savage (2007a) and Spruce (2002) identify the lack of progressive approaches in music teaching with ICT, such as the use of avant-garde music for teaching. Green (1988) has pointed out that avant-garde is unpopular with teachers as "many did not teach it, or only did a little of it, because they self-avowedly did not know much about it and were not, therefore, familiar with its style" (1988:69).

Nonetheless, research has proven that using innovative approaches of ICT and when providing a link into electronic music, which relates to electroacoustic music, can even reduce school dropout (Alvaro, 2010). The research of Alvaro (2010) and the EU-funded E-Motion project support this idea and utilise the possibilities of electronic music which offers innovative practices in the music classroom through the use of ICT. In this way a link is created with other core curriculum subjects, thus involving students in innovative learning experience, which relates to them.

Progressive approaches to music education can be traced back to the 1960s, when the ideas of educators and composers, such as Peter Maxwell Davies, Raymond Murray Schafer and Brian Dennis, were able to develop (Spruce, 2002:14). Their ideas were influenced by Orff's 'Music for Children' published during the previous decade and were based on the experience of sound in music without being concerned about notation and codification. Their ideas provided opportunities for music pedagogy and for students "to engage directly with music as composers and performers" (ibid: 15).

Moreover, composers, such as Cage and Varese, were "challenging the very foundations of Western music" (Beckstead, 2001:45). Varese stated:

"I have been waiting for a long time for electronics to free music from the tempered scale and the limitations of musical instruments. Electronic instruments are the portentous first step toward the liberation of music"

(Varèse cited in Beckstead, 2001:45).

Wright (1992) reports: “Arguable the most profound change in the musical culture of this century has been the development and spread of sound recording” (1992: 379). Hence it is open to discussion why the music educators do not pay attention to all these changes that offer ‘liberation’ of music from the traditional approaches?

Brian Dennis (1970) believed that “the health of an art is in danger if those who teach it fall too far behind those who practise it” (cited in Beckstead, 2002: 45). This is particularly true, as performers and composers, who are more regularly in contact with ICT than music teachers, have other insights in relation to it. Particularly electroacoustic music insights offer

“the perception that all sound is capable of becoming musical material, whether from traditional instruments, from our everyday environment, or produced electronically; or the progressive discovery that the means to capture and generate sound and explore its expressive potential is available in totally new ways. Moreover, through new technology the opportunity to develop musical material and make artistic judgements about structuring compositions is becoming widely accessible, even to those with little formal training in traditional musical skills” (Wright, 1992:379).

Identifying that approaches towards contemporary music can offer innovation for ICT in music education can be a huge step towards liberation of music from the restraints of the traditional practices (Brown, 2007).

Webster (2011: 115-127) in an issue of the *Journal of Music, Technology and Education*, presented an article summarising important research after 2000 and focusing on music education and technology. In this article, more than 30 research projects on music education and technology were presented, only one of which was on electroacoustic music as part of ICT in music education. Savage and Challis (2002a) reported that “in the United Kingdom soundscape and acoustic ecology approaches to composition have been under-researched and utilised by classroom practitioners” and this is obvious not only by Webster’s article, but also by the fact that SbM is still not included as part of the music curriculum neither in Cyprus nor the UK.

In one of his own research Savage (2007) identified that “despite wide and significant cultural changes, music education in the classroom is still predominantly technologically conservative”. This highlights the need for change in teachers’ pedagogical approaches when using ICT (Savage, 2007: 71). There is also need for

cultural change in order to keep music education up to date with research on the music of the twenty-first century (ibid: 74, Green, 2002).

Martin (2010) reported that this change could take place through ICT in music education:

“the current importance attached to information and communication technology (ICT) in education and the wider availability of freeware music applications have increased the opportunities for students engagement in electroacoustic music” (Martin, 2010:1).

2.5. Summary

This chapter provided a background review of the CES and an overview relating to the New Music Curriculum (2010). All the key issues relating to the CES and the targets of the ERP were identified. It also revealed the aims and targets of the New Music Curriculum (2010) as well as the aims of the MoEC to support ICT as an important innovation into schools. The chapter also discussed issues relating to ICT, which can affect the delivery of SbM lessons that might use music technologies. These issues relate to teachers and equipment, but also support the use of ICT as part of the music lesson, as it can prove beneficial to students.

The background information relating to the CES, the New Music Curriculum (2010) as well as ICT will support and guide the context of the SbM lessons. This context will be used to enhance the national initiatives of the MoEC in an attempt to meet the aims and targets of the New Music Curriculum (2010), including the implementation of ICT as part of the lesson plans.

The next chapter will identify the issues relating to SbM, concerning the accessibility of this music to a wider public. Previous research on music education, which implemented genres of SbM are also analysed in order to guide the methodological framework of this current research project.

Chapter 3: Literature review

3.1. Introduction

This chapter outlines the theoretical framework that guides the research in relation to SbM. The issues relating to the terminology used for works of SbM are identified as well as age-related issues of the openness of listeners towards new musical aesthetics. The chapter also offers a review of specific research initiatives in the area of music education, which utilise SbM concepts, along with projects, workshops and technologies, which aim at supporting SbM.

3.2. SbM literature and related issues

3.2.1. Electroacoustic music and issues of definition

Electroacoustic music is a genre of contemporary music, which has been developing for over 60 years now. It is a type of music, which primarily uses sound -as opposed to traditional musical notes- for the compositional process and then it manipulates or processes it through the use of technologies aiming to reach to the desired music result. Through the course of time, several definitions of the term have been established, such as *organised sound*, *sonic art*, *sound art*, *electronic*, *electronica*, *computer music* and *SbM*. Many of these have been used to describe works of the same music and there are considerable variations on how they are being used in every country. The next section follows the historic trail of these terms.

3.2.2.1 Historic trail of electroacoustic music

Historically, the first pre-electroacoustic terminology used was by Edgard Varèse, when he felt that the term ‘music’ was inappropriate to characterise the use of sounds as primary material in his compositions. His definition of ‘*organised sound*’ was used for this music, but this term came to have two different meanings, as Varèse and John Cage used the term “organised sound” in contrasting ways. Varèse used the term to describe works involving sound organisation presented within a musical context, such as a concert, whereas Cage suggested that everyday listening not only in a musical context is organised sound, thus music (Landy, 2006:3).

Terms, such as “*sound art*” and “*sonic art*”, were used to describe this music too. A definition of sonic art “generally designates the art form in which the sound is its basic unit” (ibid). The issue with this term is that it has no adequate equivalent term in other languages. In addition, “sound art” as a definition is usually used to “refer to works of sound organization that are normally not conceived for the concert performance” (ibid). These works are usually found outside the concert hall, such as galleries, museums and public places, and are “normally not presented as musical works”(ibid). Hugill (2008) suggests that “sound-art is understood to emerge from a visual tradition in which sound is unusually the leading element of the work” (2008:68). In Germany, the equivalent term used to describe works of sound art is “*Klangkunst*”, which literally means ‘noise art’ (ibid).

Consequently, there is a different use of the term in different countries. Other terms that have been used in parallel with electroacoustic music are *electronic music* and *electronica* (Landy, 1994: 128). Electronic music is usually a term mostly used in China and the United States to describe works of electroacoustic music. In France this term is used to refer to popular electronic music such as techno. Nonetheless, the historical roots of electronic music stretch back to Germany and the studios of Cologne. The people working there gave the name “*Elektronische Musik*” to their music to clearly distinguish it from the term “*musique concrète*” used in the RTF (Radiodiffusion-Télévision Française) studio in France (Théberge, 1997:158) (see p. 86).

On the other hand, *electronica* is a more popular term than electronic music, and used differently within various circles. It is still used to imply works of electroacoustic music, but also more popular styles, such as glitch music. During the 1990s it referred to electronic dance music and later on was also used as a term for more experimental electronic music (Hugill: 2008:135).

Computer music is another term that has been used in several occasions, from describing “electroacoustic music to audio engineering ... to people creating analyses, traditional notated scores and computer-based compositions for instruments” (Landy, 2006:5). With a wide range of works and styles using the same terminology, it is quite difficult to shape a concrete definition for the term of *computer music*.

Except from the plethora of other terms used to describe works of electroacoustic music, the term itself does not offer a clear understanding of the term ‘electroacoustic music’. This is problematic for both the teacher and student with no prior knowledge on

this music, which are the focus of this research. This inevitably led to a “terminology debate” as described by Landy (2007:9). Landy observed that different terms were being used to describe the same aspects of electroacoustic music. Thus, in 2007 he created a new term for this music called *Sound-based Music (SbM)*.

SbM “is the art form in which the sound, that is not the musical note, is its basic unit” (Landy, 2007:17). This term offers a simple and clear definition that can include all the above terms. For the purposes of this research, which involves amateur listeners of electroacoustic music as well as teachers and students with limited or no knowledge on electroacoustic music, the term of SbM is chosen for avoiding confusion between all terms used. The term distinguishes sounds in two categories: the ones that can be expressed as notes and the ones that cannot. This makes it easier for students to understand the difference between sound-based music and note-based music.

3.2.2. SbM issues of accessibility to a wider public

In spite of the fact that using Landy’s term SbM can eliminate several terminology issues, there are still accessibility issues which need to be resolved. It was in 1990 when Landy asked: “Is more than three decades of computer music reaching the public it deserves?” (1990:369) and in 2004 he continues to wonder: “almost a decade and a half later, have things improved? ... digital sound is everywhere, but electroacoustic music, the most used term in (*Organised Sound*) for the relevant body of work, five and a half decades old, is still having teething problems in most countries in terms of its acceptance” (Landy, 2004: 227). Others have also identified these accessibility issues. Stead (2009) shares the concerns of others for lack of audience in the field of electroacoustic music, whereas Stubbs (2009) identifies the disconnection of listeners with contemporary music, including SbM:

“Why has this music failed obdurately to make the same inroads that modern art has into the collective consciousness? ... Why does the nonconformist, the unexpected, the dissonant still upset modern listeners... (?)” (Stubbs, 2009: 109-110).

Sharing similar concerns of accessibility of SbM, Georgaki (2005) acknowledges that this music raises many questions in the world of traditional music, because it is “often regarded as narrow, highly specialized and, in the worst of cases, elitist” (2005: 15).

Georgaki recognizes that:

“the reception of an electroacoustic work by an audience who has never listened to this kind of music, can easily be traumatic. It depends on the formation, receptiveness, imagination and familiarity of the listener, with these new sound environments” (ibid).

Identified by Georgaki (2005:15), traditional musicians consider SbM as elitist. The view shared in the traditional music world is that SbM is the elite music of the university musicians, as it is considered highly specialized. This is partly the result of the specialized definitions used for electroacoustic music, which are not widely understandable, and partly the result of specific music technology courses, which are usually offered in universities, as part of music technology degrees.

“In most countries new music, be it performed on concert stage or in alternative space, has the smallest public of all the contemporary arts, with the possible exception of video art and poetry”(Landy, 1991:99).

As reported by Weale (2006), this could be the result of lack of promotion and media coverage or marketing of this music. If there is no promotion of this music to be heard to a wider public through public radio, television or any other popular mass media, then how would it be possible for people outside of this music field to listen to this music? In consequent, how would people search for it, though journals, books and probably the Internet for more information?

“An active approach towards establishing broader dissemination and access requires finding the means of making the listeners aware that such music exists in the first instance, i.e. *marketing*” (Weale, 2006:198).

Moreover, university musicians, who are passionate about SbM, are most likely to exchange ideas with other university musicians in specialised conferences around the world. These conferences offer the opportunity for these musicians to exchange ideas in relation to SbM and evolve this music; but this happens in a relatively closed community.

“The members of the electroacoustic community involved in scholarship consist of primarily, although not solely, people working within the area, be it on the development and/or creative application side(s)” (Landy, 1999:61). Additionally, most of the different kinds of journals, which deal with this music, are highly specialised “or ...written only

for the chosen few” (Landy, 1999:62) and do not offer many opportunities to the wider public, not for access, but for understanding and appreciation of the on-going research in this field. “It therefore appears that very few people look into the scholarly areas of electroacoustic music from ‘without” (Landy, 1999:61).

Research addressing these issues has tried to change these situations and promote accessibility of SbM to a wider public. Educational researchers, technological researchers and musical researchers have been trying to resolve the issues of marginalisation of this music genre. New publications and journals, such as the “Journal of Music, Technology and Education”, particularly focus on the technology’s link with music and education, educating people outside of this field. In spite of this, more research needs to focus on the youth, to attract more people towards SbM, but it is obvious from the existing literature that there is little happening in the area of SbM in schools. Most of the research that is taking place in schools focuses on the implementation of ICT in music education.

Nonetheless, this effort of implementing ICT in music education is of great importance for SbM, as it can utilise ICT to a great extent in the music classroom, offering innovation in teaching and learning. In spite of the huge amount of research of ICT in education, the pedagogy of SbM in schools is not yet extensively researched and only a few projects investigate this in schools. Although there is a number of projects investigating electroacoustic music as part of undergraduate programs of university studies, in order to expand their offering of course modules, this is not the case in school classrooms.

This current research project focuses on the pedagogical implementation of SbM in schools and within music education, involving SbM ideas, concepts or techniques in the music classroom.

3.2.3. Age related openness to new musical aesthetics

Research identified that there is age-related openness to new musical aesthetics, which affects the preferences of listeners towards music. Researchers in the field of musical development are interested in the development of aesthetic reactions to music (Kopiez and Lehmann, 2008: 121). Their research can help in defining the appropriate age groups for unfamiliar music to be introduced and then the appropriate age limits for the introduction of SbM to a new audience, in order to be accepted.

In 1982, Hargreaves published a research in relation to musical taste, and he reported that “the tolerance towards unconventional musical styles... it is assumed to decline with increasing age” (ibid). He named this tolerance as the “open-earedness”, and this assumption is called the “open-earedness hypothesis”. Other researchers also support that there are “critical time windows” that influence tolerance and acceptance towards new aesthetic experiences (ibid; Hargreaves et. al., 2006). They all agree that age is the most important predictor for musical preference (Kopiez and Lehmann, 2008: 122), but there are no clear predictions on the age range of when this “open-earedness” transition occurs or closes. Moreover, Kodály (1929) suggested several years ago that “a child is most open to new influences up to fifteen years of age after when it becomes increasingly difficult to develop a new creative talent” (cited in Landy, 1994:24). Therefore it is important that the contact with unfamiliar music should occur earlier than 15 years of age, in order for the listener to be still “open” to new musical aesthetics. This assumption has an influence on the sample age of the students participating in the research, identified in the methodology chapter (see p. 108).

3.2.4. Teachers’ Concerns

Moreover, there might be some issues relating to teachers’ concerns of implementing innovative materials. Similar to teachers’ resistance of implementing ICT (see p. 33), teachers’ concerns are related to their feelings, thoughts and reactions in relation to practice (Hord, et al. 1998). These concerns are apparent especially during educational change and the implementation of innovative material (ibid; Manouchehri and Goodman 2000). For the purposes of this research, in which new and innovative material relating to SbM will be implemented in the music classrooms, some of these concerns might come up. Such concerns relating to the implementation of innovative material become apparent because of the teachers’ “need to cope with new conditions in one’s work environment” (Christou et al. 2004:160).

More specifically, these concerns can be categorised into self, task and impact concerns (ibid; Charalambous and Philippou, 2010). Self-concerns are related to the tension teachers feel, when trying to successfully implement the material. Task concerns have to do with the teachers’ obligations in the school, such as the time available to cover the curriculum, as this might affect their choice in implementing something new outside the curriculum. Impact concerns are teachers’ anxieties relating to their students’ learning. These concerns can also affect the choice of innovative material, as teachers will not be convinced that their students will benefit from these. All these

teachers' concerns might also be a barrier when trying to implement the new material of SbM in the music classrooms, as these might influence the delivery of the lessons and have negative results on the students. Consequently, it is important to consider the teachers' thoughts and feelings in relation to the material implemented in the classrooms, in order to minimise teachers' concerns.

As this research project takes place in schools, there is a need to identify previous research that focused on the introduction of SbM inside the music classroom. The following section presents in detail research initiatives that were successful in supporting SbM in the music classrooms and guiding research projects, in terms of methodology, structure and in relation to the content included in the SbM lesson plans.

3.3. SbM in education

3.3.1. Research Initiatives

Researchers have sought to connect “the technology-based composing done in schools with the authentic practices of electroacoustic composers” (Martin, 2010:1). This has led to research in the music classrooms, which utilises listening, composing and performing strategies of SbM within the school environment, in order to offer a new and innovative approach towards these three key areas.

Research by Savage (2005) as well as by Higgins and Jennings (2006) has focused on the use of SbM strategies within the areas of composition, whereas Holland (2011) introduced SbM in the music classrooms to enhance the listening activities of students. Other researchers develop e-learning environments specifically designed to familiarise and educate students in relation to electroacoustic music (Wolf, 2008; Landy, 2007) while workshops, projects and supporting websites have been introducing SbM ideas to students too.

The following sections examine these projects and research in greater detail, in order to consider previous research in the UK and Greece, which introduced SbM to students. These projects offer information on how SbM lessons can be used in the music classroom, individually or as part of a music curriculum. Each research reveals important information that influences the methodology, structure and content of this research project.

3.3.1.1. *Electroacoustic music in the music classroom (Savage, 2005)*

Savage identified in 2002 the need for educational change in the way ICT was being used in the music classroom and his PhD thesis aimed to “analyse and evaluate the use of ICT as a way to develop new approaches to music education” (2005b: 178). Being a teacher-researcher offered him the opportunity to use a methodological combination of action research and case studies in the music classrooms to investigate “how pupils engage with and organise sounds with ICT” (ibid: 167). Savage’s research of pupils aged between 11 and 16 was influenced by “concepts, technologies and working practices drawn from the world of electroacoustic music” positioned in the “‘formal’ world of music education” (2002:8). He identified that electroacoustic music strategies towards composition, can offer an innovative approach towards the use of ICT in the music classroom.

The two case study projects of his initial research were ‘Dunwich Revisited’ and ‘Reflecting Others’. The former used the ideas of creation and manipulation of sounds, while the latter focussed on “digital media as a means of collecting, editing and arranging sounds and images” (Savage and Challis, 2002b). During the projects the electroacoustic composer Mike Challis was also involved and helped the students create, manipulate and structure their sound compositions (Savage and Challis, 2001). The outcomes of this research showed that these new techniques led to new creative, artistic and original work by the participating students, adopting the compositional strategies of electroacoustic music composition.

Through these projects Savage aimed at the use of the technologies in imaginative ways in order to lead to

- “new models of performance and composition....
- stimulating and creative tasks....
- effective use of these tools...
- changing models of assessment and evaluation”

(Savage, 2002:4)

He identified that during this practice and use of electroacoustic music ideas and concepts through ICT in the music classroom a “major shift in culture and established practice” was provided (Savage, 2005b: 178). Savage’s research has proved that with the correct choice of technologies to be used in the music curriculum, students engage more with musical experiences that are “challenging, varied and educationally richer

than those possible within a music curriculum devoid of ICT” (ibid). These experiences can be drawn from sound-based and electroacoustic music.

Moreover, Savage moving forward has been developing musical software instruments and resources that could be used in the music classroom. Examples of his work are:

- the *DubDubDub* player which uses the sonic environment of the Internet to remix, arrange and prioritise sounds in order to create new musical works (Savage, 2007),
- the *Sound2Picture* resource, which borrows elements from the sound designers worlds (Savage, 2005c), and
- the *Hand2Hand* and *Dot2Dot* musical instruments, which use traditional Playstation 2 controllers. The first one allowed to virtually perform a string quartet and the second introduced staff notation to the students following the ideas of the children’s game of connecting the dots to create a picture (Savage, 2009).

Savage’s research was approached as the stepping-stone for this current research, which adopted the research methodology of case studies and action research used in Savage’s research. Also, the researcher has adapted some ideas used in Savage’s research, in relation to the composition of electroacoustic music, in order to create new lesson plans of SbM that could be used in the music classroom.

3.3.1.2. *Musique concrète for composition with students (Higgins and Jennings, 2006)*

Another source of inspiration, which influenced the methodology of this research project, was the research conducted by Higgins and Jennings (2006). The research followed the hypothesis that “by engaging in the composition of musique concrète, students will become more informed listeners to electroacoustic music in general” (Higgins and Jennings, 2006:179). This hypothesis was tested through a research study conducted by Higgins and Jennings, engaging a teacher and ten 16-year-old high school students.

Higgins and Jennings (2006) tested different teaching approaches of sound manipulation and structure of sound events, using a digital audio editor (Cool Edit Pro). The authors suggest that it is better for students to engage directly with sound rather

than hearing about it, confirming Burnard and Younker's (2004) findings that students should "construct their understanding through doing" (cited in Higgins and Jennings, 2006:179). The constructivism approach was utilised within this project, allowing students to construct knowledge based on their previous knowledge.

The project was approached in levels of compositional activities, evaluating them as failed or successful, until a detailed pedagogical model emerged. In relation to Savage's stages of experimentation, selection and structure, for this study "the teacher would choose the students and the sound files, set the task and observe their progress" (ibid). The researchers argue that it is possible for inexperienced listeners to find meaning in works of SbM, but music students should be informed listeners. Students being informed listeners "ought to have a capacity to interpret objective features, such as sound and structure, in the context of musical works" (ibid: 184). Higgins and Jennings identified key activities and concepts of the research that promoted students in becoming informed listeners. These areas were focusing on sound, structure and listening (not just hearing). This showed that listening exercises are essential for the learning and understanding of compositional processes and strategies of *musique concrète*.

Moreover, they identified the role of the teacher and his ability, even as a non-composer, to teach composing. Important was also considered the choice of software, which was based on Stockhausen's four criteria for composing electroacoustic music – filter harmonics, create layers of sound in a multitrack facility, stretch sound and find useable material within noise (ibid: 184-186). The findings of the study showed that it is possible for post-primary students to go through the necessary thinking process to produce a work of *musique concrète*. The researchers added that "it also demonstrated that possession of these skills equips them to relate in a more informed and meaningful way to electroacoustic music in general" (ibid: 186).

This research not only identified the importance of a constructivist approach towards learning SbM, but also the importance of the listening exercises and highlighted the central role of the teacher. The fact that the New Music Curriculum (2010) as well as previous research proved that constructivism has positive results on students, when implementing innovative material, guides this research project in adopting the same educational theory; that of constructivism.

3.3.1.3. Listening strategies of SbM used in the music classroom (Holland, 2011)

Holland's research identified the importance of listening exercises as part of the introduction of SbM to students. This research was based on the concept of heightened listening (see p. 83) and whether "raising aural awareness in young inexperienced listeners could influence their appreciation of electroacoustic music that includes real world sounds" (Holland, 2001:5).

The heightened listening (HL) project took place in the form of workshops in several schools. It included listening exercises supported by those of R. Murray Schafer, in order to influence the appreciation of the listeners towards works of electroacoustic music, thus making heightened listening a tool for accessing SbM. The researcher composed a soundscape work to test the material used in the workshops, evaluating and recomposing it after feedback from the students. Workshops with blind or visually impaired participants were conducted as a reference to explore their response to electroacoustic music, "as these subjects already possess heightened sonic awareness through practiced everyday listening" (ibid).

The results of this research suggested that heightened listening did raise appreciation of electroacoustic music from the inexperienced listener. It was also identified that the involvement of students in the creative process of the soundscape composition would have been even more engaging for the students and thus more beneficial in raising sonic awareness and electroacoustic music appreciation.

The outcomes of this research project support the importance of the listening exercises in order to raise sonic awareness and appreciation towards SbM. However, an important finding of the research is the need for involvement of students in the creation of SbM in order for the lesson to be more beneficial to them. The current project takes into account the outcomes of this research and will not only furnish the SbM lessons with listening activities to raise students' aural awareness but will also allow them to create their own SbM compositions.

3.3.1.4. EARS II: an e-learning environment for electroacoustic music pedagogy (Landy 2007, Wolf 2008)

Two recent projects, which are based in the Music, Technology and Innovation Research Centre (MTIRC) of De Montfort University, are the EARS and EARS II websites. “EARS” (ElectroAcoustic Resource Site), being the first website, which was established in 2001 co-ordinated by Leigh Landy and Simon Atkinson, is a resource for academics in electroacoustic music, aiming at “providing academic information for researchers in the realm of electroacoustic music” (Wolf, 2008: 106). Currently, the website offers multi-lingual glossary (Greek translations are being prepared) with definitions of electroacoustic music, which are categorised in 6 areas: Discipline of Studies, Genre and Categories, Musicology of Electroacoustic music, Performance Practice and Presentation, Sound Production and Manipulation and Musical Structure (EARS website). The website also offers a thesaurus, publications and an extended bibliography of 3000 items.

EARS site is a logical starting point for the development of a pedagogical tool for children. Thus, the EARS II site was created to present the information on EARS in a comprehensive and accessible fashion, specifically designed for children. The basic aim of the pedagogical site EARS II is to construct knowledge around electroacoustic music. There is a need to understand the process of composing electroacoustic music and gain a listening experience of this music, in order to lead “to a better acceptance of electroacoustic music” (Wolf, 2008: 106). The website is working specifically in three areas: understanding, appreciation and creation of electroacoustic music. The actual research, before the creation of the online e-learning environment, took place in schools in order to test how understanding, appreciation and creativity can be approached thus informing the online environment. Moreover, a special software is being utilised through EARS II, called “Composing With Sounds”, which is specifically created for the young. This software focuses on the creation of electroacoustic pieces by the user, and aims at constructing learning in different areas, such as manipulation of sound, sound as potential musical material and sound effects.

EARS II has also a supporting curriculum, aiming not only at the young/ students but also for teachers willing to use this site in their music teaching classrooms. The content of the site is presented in a chronological order with links on the different types and genres of each year. The advantages of having a pedagogical website for electroacoustic music is that it offers different ways of learning (through reading, creating or listening), and is also universally available. EARS II will “provide young people and inexperienced people of all ages the opportunity to come to grips with the basic concepts and approaches in our field [electroacoustic music]” introducing a “learning by hearing and

doing” environment (Landy, 2007: 141-144). The content of EARS II as well as the software “Composing With Sounds” can be used as external material and aid tools for teachers that are willing to implement SbM activities into the music lesson.

(The EARS II website was under construction at the time of the writing of this thesis.)

3.3.2. Workshops and projects using SbM ideas in schools

Apart from the above research initiatives that support the introduction of SbM ideas and techniques into the music classrooms, there are also government initiatives, which support particular organisations or groups to develop workshops and projects into schools. These workshops and projects primarily focus on activities involving sound, thus promoting SbM in a more indirect way in the music classrooms.

3.3.2.1. Sound and Music (SAM) website projects and workshops

One of the organisations, which is particularly interested in sound education, is the “Sound and Music” organisation (SAM). “SAM is a major new organisation and a Regularly Funded Organisation of Arts Council England” (SAM website). Its members primarily organise projects in the field of contemporary arts focusing on music and sound. As part of these projects, there are also educational workshops, projects and seminars that focus on the pedagogy of SbM in schools (including pre-primary, primary and secondary). Some of these projects are repeated every year in different situations and schools. Some of the most important of these projects are:

1. Sonic Postcards
2. The City Rings (I and II)
3. Audio explorers
4. Listen, Imagine, Compose
5. Minute of Listening
6. Go Compose

The importance of these projects lies on the fact that the activities included in each project are introduced to students and can promote SbM in different ways. These activities can guide the creation of some of the material that is going to be used for the creation of the SbM lesson plans. Hereinafter there is a more detailed description of each project, with reference to their pedagogical aims and outcomes.

Sonic Postcards

The *Sonic Postcards* project is an example of innovative use of technology and musical learning, made available from the Sound and Music organisation (formerly the Sonic Arts Network) promoting and exploring “the art of sound via the internet” (www.sonicartsnetwork.org), (<http://www.soundandmusic.org>). The project is aiming at young people, between 9-14 years old students, in the UK and overseas. The Sonic Postcards idea derives from the ordinary postcard but with a twist. “As with an ordinary postcard it offers the opportunity for people to exchange information about their local environments providing windows into a variety of places, lives and cultures from urban to rural”, but using sound as primary information, rather than image (Sonic Postcards webpage).

The project creates links with curriculum subject areas, such as music, geography and English, guided by the key government initiatives for e-learning and for protecting the environment (ibid). The project also includes a teacher’s pack to guide them through the tasks of the website. It has been awarded with the “New Statesman New Media Award 2006 for Education” for “making the most significant contribution to education through the use of new media technology” (ibid). Up until now it has been introduced to “4500 students in 170 schools and 400 teachers, who have taken part in the Sonic Postcards project” (ibid).

The City Rings

“*The City Rings (TCR)* is an international sound pedagogy project initiated by Aifoon, MTG/Sons de Barcelona and Sound&Music; and actually being developed in the frame of Sounds of Europe” (<http://thecityrings.org>). *The City Rings* I and II projects are a continuation of the Sonic Postcards’ efforts to introduce and engage students with the sounds of their environments and exchange their experiences through sound, but this time is in a form of workshops with resident artists in schools in various countries.

Students are introduced to new and creative ways of listening and recording sounds. Then, the students can edit and compose music using their recorded material. The workshops emphasise on the sounds of the students’ everyday life surroundings and on exchanging compositions using the “Freesound” software. By exchanging the sounds, students can reflect on and appreciate the sounds of their environment as well as identify new material for later compositions. All the works of the students are made public through the website of The City Rings.

Audio Explorers (2011)

Audio Explorers is a pupil-led project for students in Years 5 and 6, which explores the creative possibilities of using sound. This “new sound art bursary scheme” is taking place in schools of South Cumbria and is funded by SAM in conjunction with Creative Futures Cumbria and Full of Noises Festival. The Audio Explorers project takes place within the participating classroom group and supported by a close collaboration with a sonic artist.

The project aims at engaging both students and teachers in working creatively with sound as well as being able to self-led a project.

“Aims of the Audio Explorers project were:

- ✓ To encourage pupils to exercise their imagination and creativity.
- ✓ To invite pupils to engage with listening and sound.
- ✓ To create opportunities for pupils to gain real-world experience of directing their own learning.
- ✓ To provide opportunities for children and teachers to work with professional artist” (SAM website)

Listen, Imagine, Compose (2011-2012)

After obtaining a funding award from the Esmée Fairbairn Foundation, SAM organised a series of symposia and action research projects in schools, in order to explore compositional process in schools and deliver new methods and solutions.

“Past Ofsted⁶ reports have highlighted weaknesses in current secondary school music provision, including: the lack of attention to internalising sound as a basis for creative thinking; the lack of quality and depth in pupil responses; insufficient understanding of what musical progress involves; and the fact that composing activities are rarely related to the work of established composers.” (SAM website)

⁶ Ofsted is the Office for Standards in Education, Children’s Services and Skills in the UK. It is an independent authority, which inspects and regulates services that concern children, including those who provide education (Ofsted website: <http://www.ofsted.gov.uk/about-us>).

Identifying these issues, this project aims at involving teachers and students as well as professional composers and performers in projects to research and present new ideas and change in teaching composition in schools.

The project is in partnership with Birmingham Contemporary Music Group (BCMG), as well as with researchers from the Institute of Education, and Cambridge, Birmingham City and Manchester Metropolitan Universities. A previous collaboration of BCMG with SAM was in 2002, in the Exchanging Notes project.

Exchanging Notes (2002)

Exchanging Notes is a project, which focused on the interaction of teachers with composers. “This was designed to strengthen and investigate the pedagogy of composition and develop new strategies for the teaching of composition across the secondary music curriculum.” (SAM website). The most important aspect of the project/collaboration was the development of teaching strategies that could be practical and able to be used in every situation.

Minute of Listening (2012)

Minute of Listening is a project focused on listening, for students between 3 to 11 years old. Through this creative as well as learning project, SAM “hopes to enable every child in the country to gain access to a huge diversity of music and sound and, for sixty seconds each day, to focus on the richness and enjoyment of the act of listening” (SAM website).

SAM, identifying that listening is overlooked, especially in schools, tried to explore the aural experiences of the students, in order to develop more concentrated and, most importantly for younger students, more imaginative listening. “This project aims to highlight the importance of listening and create a structured, daily activity that allows teachers the time and the means for their class to explore a wide variety of listening experiences” (SAM website).

Minute of Listening has a specific software package in which a variety of recordings and sound samples can be used in the classroom, accompanied by supporting material and other resources for the teachers. The participating teachers are encouraged to follow the *Minute of Listening* with a conversation with their students regarding the sounds, in order to promote concentrated listening and trigger imagination.

“Minute of Listening provides a stimulus for imaginative class discussion, reflection and opinion forming, encouraging children to verbally explore what they hear, and supporting speaking and listening agendas. The project also presents an opportunity for children to let their imaginations run wild, and we welcome the idea that there is no right or wrong response when talking subjectively about their individual impressions of what they heard.”

Most importantly, in relation to SbM, *Minute of Listening* could be useful in identifying the importance of listening activities for young students, in order to promote a more “curious, engaged and reflective listening in the classroom” (SAM website). As it is stated in the website, one of its aims is “to explore how music and sound can be used as a stimulus for analytical thinking, imaginative enquiry and conceptual exploration” (SAM website).

Go Compose! (2012)

“Go Compose! is an intensive composition project for young composers aged 13 – 18, who are still at school”. The students have the opportunity to work in close collaboration with composers and musicians, who can aid and guide them in creating their own original music. The students’ compositions were performed in the Red Note Ensemble’s Noisy Night on 22 October 2012 as part of the sound festival.

The projects of SAM support the initiatives of this current research project, guiding it through different stages, especially providing examples for activities that are essential or have positive results for each age group (pre-primary, primary, secondary). The most important is the fact that these projects are supported by government organisations and are funded by other institutions, because they recognise the importance of sound education for the young as well as for adults.

Summary of the SAM projects and their importance to this research project

These projects inform the potential content of the SbM lesson plans in many different aspects. Starting from the curriculum links made possible through “Sonic Postcards” to the listening activities of the “Minute of Listening” project, each project supports a sound education and pedagogy in its own way. “Sonic Postcards” offer an opportunity to link sound with the environment. “City Rings” aim to engage students with the sound of their environment and experience them. “Audio Explorers” supports the imagination and creativity of the students, while “Listen, Imagine, Compose” introduced students to the composition with sounds. Finally, “Go Compose” supports students’ compositions

with the help of professionals, while guiding them to create their own original music. The aims of all these projects can be introduced in the SbM lesson plans through similar activities, which support sound education and most importantly introduce SbM to students.

3.3.2.2. Project “Sound and Nature”

Other government initiatives take place in Greece, such as the “Sound and Nature” project. “Sound and Nature” (2003) was a project funded by the Centre of Environmental Education (CEE) of Poroion Serron (Κέντρο Περιβαλλοντικής Εκπαίδευσης Ποροίων Σερρών), and the Ministry of National Education and Religious Affairs Greece. The project created a Network of Environmental Education in which different schools could participate. The program was organised by the participating teachers as well as different music departments of Greek Universities.

“Sound and Nature” was approved by the CEE of Poroion Serron, in order to help students engage and protect the environment through the exploration, experimentation and understanding of their surrounding soundscapes. The project lasted 3 years and more than 150 schools participated in it.

“With this program we wanted to create motives for our students’ expression through the sound and music and more specifically to approach the history and geographic importance of our place through an original way” (Καλαθάκη και Παπαστεφανάκη, 2006:247).

The directors of the project also created a Participant’s Information Pack, in which the theories used in relation to soundwalks, soundscapes and listening exercises as well as self-built instruments were included in separated chapters. At the end of each chapter there are exercises that can be used by the teachers as lesson plans that engage students’ learning (Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, 2005).

The specific project was a government initiative and succeeded in inspiring not only students but also their teachers. The Participant’s Information Pack offered the theory and the activities to be explored during the project and it could also be used as part of a music or an ecology lesson. The current research project aims to follow the steps of the “Sound and Nature” Project and present to the teachers both the theory and the appropriate activities that can be explored during a music lesson based on SbM. It also aims to inspire teachers to use these activities in combination with other subjects in their class not just for the music lesson.

3.3.3. Websites that support SbM

Additionally, online resources and websites can be used to promote this music to a wider public and attract more people closer to SbM. These websites also include music-learning communities, compositional aid software for students, online chronological resources focusing on electroacoustic music and musique concrète, online platforms for sound artists, educational websites on soundscape and online lists of applications for teaching and learning. The global accessibility of these online communities can promote the use of SbM and influence teachers' education and teaching of this music in the music classrooms. Some of these websites can be found in Table 3.1.

Table 31: Supporting Websites for SbM in education

Website name	Website's address
SoundJunction:	www.soundjunction.org
Organising Sounds:	www.organisingsounds.com
ArtSones, L'aventure electroacoustique:	http://www.ina.fr/fresques/artsonores/accueil
Sounds of Europe:	http://www.soundsofeurope.eu/
Positive Soundscapes:	http://www.positivesoundscapes.org
Music Apps Learn Teach	http://musicappsforlearning.weebly.com/index.html

3.4. Summary

This chapter served as a literature review relating to SbM. It identified previous research that can support this current research project and guide it through the creation of the SbM lesson plans. It also revealed useful information relating to the accessibility of SbM to a wider public and the other issues that need to be addressed, such as terminology and marketing of this music. Most importantly, this research identified that the appropriate age to be introduced to new music, such as SbM, is before 15 years of age as guided by the “open-earedness hypothesis”, in order for students to be more open to new musical aesthetics.

Moreover, the chapter identified how previous research initiatives can support this research project, in terms of methodology and in relation to the content. Projects and workshops taking place in schools were also presented in order to define the context as well as the content of activities relating to SbM that could be used in schools. Websites that can support educators, when teaching SbM were also presented, offering a global online repository.

The next chapter will identify in detail educational theories that will guide the SbM lesson plans, supported by the New Music Curriculum (2010). In addition, it will present the theories that are going to be used for the content of the SbM lesson plans, once again guided by the national initiatives of the MoEC and the aims and targets of the New Music Curriculum (2010).

Chapter 4: Sound-based Music Lesson Plans (theories, content and design)

4.1. Introduction

To address the issues identified in the previous chapters, an investigation of educational theories needs to guide the creation of the SbM lesson plans. The researcher in this chapter explores learning theories that would guide these lessons, together with the most appropriate SbM theories that could be used in the music classroom by teachers with no prior knowledge around SbM. This chapter identifies these theories and relates them to the SbM lesson plans, in order to address issues of access and appropriateness. The chapter starts with the categorisation of the educational teaching theories, which guided the SbM lesson plans and by the end of the chapter, the researcher summarises the SbM lesson plans created using the educational and SbM theories presented.

4.2. Educational learning theories used for the creation of the SbM lessons

The learning experience includes three aspects: the curriculum, the teacher and the learner/student (Moore, 1990:24). In relation to curriculum, which is the material to be learned, there are different learning theories. These learning theories can be divided in three categories:

1. Behaviourist: changes of the behaviour of individuals affected by other mechanisms of response and stimulus, can promote learning.
2. Cognitive: each individual has a distinct learning, based on mental process.
3. Situated: the social environment interactions of each individual affects learning


(Fautley and Savage, 2007: 7)

Within these three categories constructivism theory is included in the cognitive learning theory. "Constructivism views learning as an active process, in which the individual constructs meaning for themselves" (ibid: 9). As explained by Pritchard (2009), constructivism is the learning that takes place when an individual constructs new learning

over his current structure of knowledge, understanding and skills (2009:17). Knowledge, understanding, skills and attitude are the four areas of school learning.

Constructivism is divided in two areas: social constructivism and radical constructivism. This research focuses on social constructivism, which supports that meaning is constructed through the interaction with other people, thus students should work in groups rather than individually. This would increase their accomplishments and as supported by Vygotsky's notion of the 'zone of proximal development', students can learn more when collaborating with others than by doing so alone (Vygotsky, 1978).

Moreover, constructivism supports that it is important for learning to get as closer as possible with the learning material and then interact with it. This 'closeness' is also known as 'engagement'. This engagement can be approached through mental or physical activities that bring closer the individual with the new material. Reid et al (1989) created a five-stage model for learning and placed 'engagement' at the top:


- 
1. Engagement: students' obtain information and engage in the experience of learning.
 2. Exploration: open-ended process for students to explore the new material through tasks, providing an overview.
 3. Transformation: students reconfigure information to meet learning objectives.
 4. Presentation: the result of transformation, which allows students to answer certain questions in relation to the new learning.
 5. Reflection: students reflect on the material, which allows a deeper level of understanding.

(Pritchard 2009:30, Reid et al., 1989)

This learning model emphasises that learning "is a process of interaction between what is known and what is to be learnt" (Pritchard, 2009:106) and that through these five stages this can be achieved. This model can help the structure of the SbM lessons, in order to engage students with the learning material. Following this process, students should be able to remember the different terminology of each lesson as well as provide an example for each, after experiencing it throughout the activities.


As reported by Polanyi (1967), "we can know more than we can tell" (1967:4), so questioning students could provide the teacher with feedback in relation to what students are learning. Here the work of Bloom (1956) and the taxonomy of thinking into levels

according to cognitive complexity might be helpful. In 1956, Bloom with his team classified thinking in six categories:

- 
1. Evaluation
 2. Comprehension
 3. Application
 4. Synthesis
 5. Knowledge

This taxonomy is characterised as *Bloom's taxonomy*, and it presents hierarchically the levels of thinking: 'Knowledge' being the lowest order of thinking and 'Evaluation' being the highest order of thinking.

In 2001, Anderson and Krathwohl revised Bloom's taxonomy making some significant changes to the levels of thinking. Their taxonomy is as follows:

- 
1. Creating
 2. Evaluating
 3. Analysing
 4. Applying
 5. Understanding
 6. Remembering

This taxonomy introduces 'creating', as the highest order of thinking. On one hand this shows that creativity can promote higher order of thinking to students thus supporting knowledge, but on the other hand it suggests that creating is the 'hardest' order of thinking, as it is the final stage and more difficult to be achieved. These two taxonomies provide the teachers with the knowledge to pose questions in relation to each level, in order to identify the knowledge they promote in their teaching. The SbM lessons are particularly focused on abstracting the highest level of thinking from the students through engaging them in creative activities which include different levels of difficulty, such as composing and performing.

Throughout the identification of the learning theories, it can be recognized that creativity is considered as very important in the learning process. Its position in the music curriculum is justified by the belief that "creativity engages pupils in 'active' learning"

(Crow, 2006: 121). Many consider creativity as vital for the learning process. Burnard (2007) suggests that creativity is “an essential human attribute lying at the heart of all learning and [can be used] as a process of making something new” (ibid: 37). Thus, it is necessary to investigate the ways that creativity can be used in the music classroom and how teaching and learning is affected or can be promoted through creativity. This research can provide the means for the implementation of the SbM lesson plans in relation to creativity.

4.2.1. Promoting creativity in the music lesson

In relation to creativity, teaching and learning can be approached from different perspectives. It can relate to teachers’ practice, material used to promote creativity, planning objectives, learning theories and much more. Creativity is presented below in relation to three areas:

1. Teaching creatively
2. Teaching for creativity
3. Creative learning

(Fautley and Savage. 2007)

4.2.1.1. Teaching creatively

Teaching creatively involves teachers’ choice of approaches used in the classroom “to make learning more interesting, exciting and effective” (National Advisory Committee on Creative and Cultural Education (NACCCE), 1999:6). Teaching for creativity requires the development of the students’ creative thinking or behaviour by the teachers, involving creative teaching (ibid). Creativity involves action and creative learning involves an active process that can result in innovative and experimental teaching material and this material will engage the students in order to construct new knowledge (Fautley and Savage, 2007: 13; Jeffrey 2005: 37).

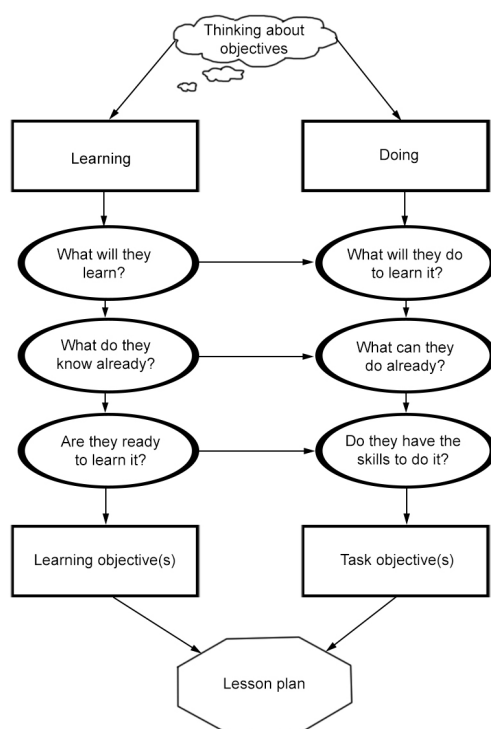
Teaching creatively primarily relates to teacher’s choices and development. As proposed by Fautley and Savage (2007:28) among others, teaching creatively is a process involving teacher’s curriculum knowledge, carrying on being a learner, cross-curriculum connections, developing high expectations, stimulating students’ curiosity and allowing time for pupils to be creative. When implementing innovative material from teachers without any previous knowledge, it is important that the lesson material can guide them through the use of creative activities. This is one of the main targets of the SbM lessons plans: to guide teachers to teach creatively the SbM material, supporting them with

theories and guidance through the activities. Each SbM lesson plan will be a complete guide for the teacher, presenting the theory of each lesson, together with a set of creative and engaging activities for the students, while at the end outlining the learning outcomes.

4.2.1.2. Teaching for creativity

All the above can help teachers become more effective and able to teach creatively in the classroom. However, teaching *for* creativity involves lesson planning and questioning. Thus two types of knowledge involving learning and doing are crucial: procedural and declarative knowledge. Procedural knowledge is the knowledge of “how to do something” and declarative knowledge is the “knowledge of facts” (ibid: 32). These two types guide the creation of the teaching material in relation to what the pupils will do and how they will do it. This relates lesson planning with the learning outcomes and task outcomes. The following diagram produced by Fautley and Savage (2007:34) shows how to plan learning and task objectives to promote creativity in the lesson, and it will be followed for the creation of the SbM lesson plans:

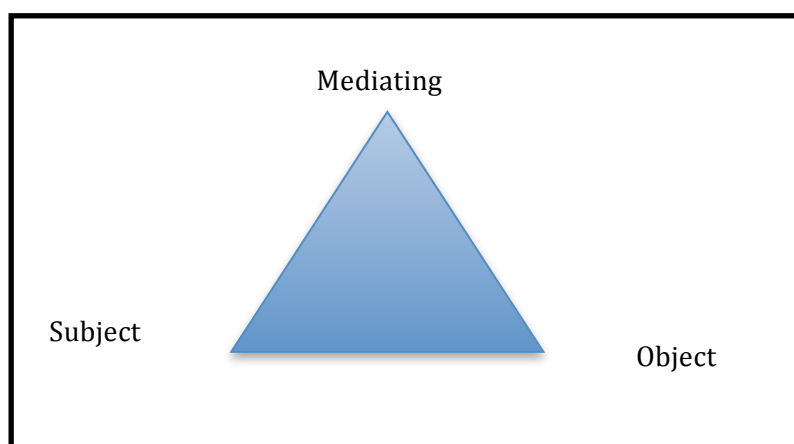
Figure 4.1: Planning objectives diagram



There are also other ways to promote knowledge through teaching for creativity. *Activity theory* focuses on the “psychological impacts of organised activity and the social conditions and systems which are produced in and through such activity” (Daniels,

2001:84). This theory introduces the idea of ‘mediating artefacts’, as being the tools that allow an individual to reach the desired outcome. The SbM lesson plans will use the idea of activity theory to engage students in creative tasks. Activities that allow students to reach to certain outcomes will follow the activity theory. Activity theory is represented as a triangle (Figure 4.2).

Figure 4.2: Activity theory triangle (Daniels 2001)



Activities, especially when students work in groups, can also adopt other theories, such as Vygotsky’s notion of the “zone of proximal development”. When students work in groups, the practical as well as the mental tasks can be distributed between the members of the group, thus each student is involved in a distinct aspect of the creative process. However, all work together on the creative task as a team. This connects to the work of Lave and Wenger (1991) on situated learning and legitimate peripheral participation, suggesting that each individual in the group-learning environment moves along the line from being a beginner to becoming an expert. Many of the activities of the SbM lessons were designed in order to promote group-learning environments, but the practical issues of the groups were left to the judgement of the teachers. These decisions relate to the size and type of the groups.

In relation to size, groups can be “individual, pair, small group of 3-4 students, large group of 6-7 students or whole class” (Fautley and Savage, 2007: 47). In relation to types these could be “friendship groups, ability groups, structured mix, random mix, single sex” (ibid). In order for the teachers to decide the size and type of the group they need to “know” the class, particularly in relation to the abilities and friendship issues between the students, in order to create the most effective group environment for the students to

support learning. Thus, the SbM lesson plans will not specify the exact size or type of groups, leaving this to the discretion of the teachers.

4.2.1.3. Creative learning

Creative learning can also follow the constructivism theory identified above. The *process* and *product* of learning is the key in creative learning. In creative learning the focus is on learning, not on doing. This focus will guide the activities presented in the classroom and four key elements support this:

1. “Divergent thinking- developing imagination.
2. Experiential learning- developing and accumulating experiences.
3. Motivation-fostering an on-task mentality in the pupils, springing from...
4. Enjoyment-undertaking creative learning should be fun.”

(Fautley and Savage, 2007:55)

Developing the imagination of the students plays a key role to creative learning. Motivation from the teachers can also support creative learning in situations where the students need to develop new skills in order to complete the tasks. These skills are drawn back from the students’ previous knowledge, but creative learning is facilitated as the students further develop these skills to complete the tasks. Authentic tasks help students develop new skills through problem-solving and students’ engagement in real-world situations. Moreover, making links between other curriculum subjects can also support creative learning. The SbM lessons will aim to provide creative tasks that can be engaging and applicable to real-world situations relating to SbM. This will enhance the students’ experiences. Such exercises could include discussions and tasks relating to the environment and sound pollution, which can be issues concerning students. Especially for the Cypriot context, lessons which involve social issues, such as the unsolved Cypriot problem of the two communities, could engage students more in the learning process.

Furthermore, experience and imagination are considered as the key elements required for creative learning projects (Hobbs, 2005). According to Hobbs, “creative learning is a process, which focuses on students’ ideas” (ibid). The starting point for students to produce unique ideas is their imagination. Thenceforth, through experimentation in groups or individually they act on these ideas in order to construct knowledge and skills, while refining these through tasks in the classroom. Thus, students develop new skills and gain new experiences (ibid). Last but not least, Cowley (2005) supports that lessons that are enjoyable are really good in engaging students in the learning process. “A lesson which

the pupils see as fun cannot be a bad thing” (Fautley and Savage, 2007: 55). The SbM lessons will not only aim at being creative, but also enjoyable for both the teacher and the students. As the activities should be stimulating the students’ imagination with interesting tasks and activities, the SbM lessons will aim at being innovative and new, thus stimulating for the students.

As already presented imagination, experience, motivation and enjoyment are considered crucial for the creative learning. Along these, there are other factors that influence creative learning. These include the teacher’s choice of focus in relation to the *process* or the *product* of the learning activities and the students’ “freedom to experiment and take risks” (Robinson, 2001).

Starting with teachers, their choice of focus in relation to the process or the product of the learning activities will influence the teaching material, the time spent on each task and the assessment of the outcome. Especially in relation to assessment, the choice of focus on product or process relates to the choice of summative or formative assessment. When the focus is on the process, then formative assessment is considered as the most appropriate, in contrast with turning the focus towards the product in which case the summative assessment could be more applicable. The SbM lesson plans will give teachers the opportunity to use both assessment methods, such as revision tests at the end of each lesson. This will help the teacher identify whether each lesson was successful and understandable by the students.

In relation to the students, freedom to experiment and take risks is an enabling condition that can promote creative learning. Robinson (2001) describes this as essential to promote creative learning. Fautley and Savage (2007) also report that: “we need to ensure that pupils have the freedom...to try out their ideas and to undertake trial-and-error processes.... Creative learning projects need to build in the *freedom to fail*” (2007:66 italics included in quote). They also support that in order for this to happen, the teacher needs to allow some ‘wait time’ and ‘space’ to the students to experiment and take their risks.

Previous research recognises that freedom is essential for promoting creativity, but it also suggests that each student could experience it differently. Savage (2004), who investigated the innovative use of ICT in music education while implementing techniques of electroacoustic music, identified that freedom is a different experience for each student. The results suggested that, on the one hand, freedom for some students could promote

creativity and allow for experimentation, but on the other hand it could lack guidance and support for students. Thus, freedom could be both a blessing and a curse in relation to creativity. Consequently, the SbM lessons will aim to give students the freedom to experiment with sounds and give them time to make their own decisions. However, this freedom should be “controlled” by the teacher in a way to ensure that the students are not left without guidance.

4.2.1.4. Inclusive education through creativity

A new element of the New Music Curriculum (2010) was the promotion of an inclusive education that was suitable to support all students regardless of abilities. Fautley and Savage (2007) support that “creativity is for all!”. Therefore, creativity can be one of the elements able to promote inclusivity in the music classroom.

There are some models and theories that can guide the creation of the SbM lesson plans in being more inclusive. Within an effective model of teaching, creativity should be incorporated through all levels of planning. It is important to consider though that not all students have the same cognitive abilities, thus creativity should be implemented in a range of different forms. This is also supported by Gardner’s (1983) theory of multiple intelligences, which supports that there is a number of domains which each individual could be more able, intelligent and productive. These domains are:

- Verbal-linguistic intelligence
- Mathematical-logical intelligence
- Musical intelligence
- Visual-spatial intelligence
- Bodily-kinaesthetic intelligence
- Interpersonal intelligence
- Intrapersonal intelligence
- Naturalist intelligence
- Existential intelligence

(Gardner, 1993)

These domains could be considered when working with groups, in which students will have different abilities and thus the zone of proximal development will be more obvious. In other words, it is suggested that in order to promote inclusiveness in the music classroom

activities should be approached from different aspects. This is going to be promoted as part of the SbM activities, which are intended to stimulate not only the musical intelligence of the students, but also some other domains, such as bodily-kinaesthetic intelligence through exercises using the body to create sounds.

Fautley and Savage (2007:98) suggest two more theories which could promote inclusiveness through creativity in the classroom: “Craft’s ‘little c creativity’ and Boden’s ‘P- and H-creative’ categories” (ibid). Craft’s little c creativity is “an approach to life which is driven to find solutions and ways through all situations, an approach to life which assumes a ‘can do’ attitude” (Craft et. al, 2001: 49). It suggests that everyone can be creative in problem-solving of everyday challenges through innovation. The SbM lessons will be designed to provide activities that can have applications in real-life, such as activities relating to the environment. This could possibly engage students regardless of academic ability.

Moreover, Boden (1990) supports everyday creativity too, relating it to the ‘ordinary abilities’ each one has and can use in creative ways (Fautley and Savage 2007:99). Boden’s categories are separated in relation to the work produced; if the work is original for the individual or if it is original for the society. P-creativity is related to the “acts of creativity which can be characterised as psychological, in the sense of having occurred to an individual” and H-creativity is for the acts of creativity, which “also have a historical importance beyond that of the immediate individual” (ibid).

These categories of creativity, especially little c creativity and P-creativity, indicate that all students can be creative and develop creative skills regardless of their academic ability. It is in the discretion of the teacher to deliver the teaching material in order to promote creativity to all students, while responding to each student’s learning needs. According to the national curriculum of England, in order to accomplish this, the teachers should:

- “Create effective learning environments
- Secure [the students] motivation and concentration
- Providing equality of opportunity through teaching approaches
- Using appropriate assessment approaches
- Setting targets for learning”

(Fautley and Savage, 2007:101)

The non-traditional music (NTM) students

Moreover, ICT can be considered as a tool to promote inclusive education through creative learning, as it offers the opportunity for creative teaching and learning practices that are innovative, imaginative and effective. The ability of technologies to manipulate sounds has offered the opportunity to students, who did not consider themselves as musicians (in the traditional sense) to engage, create and communicate music through ICT (Crow, 2006: 123).

In the process of creating inclusive environments for all students, teachers need to engage the 'non-participant' students, who are usually those that are not participating in traditional music lessons. Research in the United States has showed that the NTM students, who cannot play any instrument, or read or write conventional notation, can actively participate in the music lesson and become active music makers through performance, composition and recording equipment (Williams, 2011:143). This research supports that non-participant and NTM students can be engaged in the music lesson through creative music activities, which use technology. The catalyst for engaging this group of students is the use of "innovating technology tools, that serve to democratize music making...permitting the majority to be musical" (ibid). Technology gives them the opportunity to be musically creative using all sounds available, the "sonic palette of the music universe" (ibid). The SbM lessons will include activities using ICT and music technologies, in relation to the resources found in the music classrooms of Cyprus.

At this point, it should be mentioned that these creative technologies can also engage students with learning and physical difficulties in the music lesson. Despite being quite specialised, these technologies can be used in music classrooms and special education schools.

Technology for special needs education

Research in special schools has been utilising such technologies to engage children in the learning process as well as to provide students with special needs with ways to musically express themselves. Soundbeam is a sound instrument that works by "emitting an ultrasonic beam of sound from a sensor" that tracks movement (Ellis, 2004:114). Soundbeam has been used for years in special education, even if it was initially conceived for dancers. It has been used as a medium for children with learning difficulties and/or multiple learning disabilities, so that they engage with, interact and express themselves through sound and music. All students can use it, but it was identified that, regarding students with special needs, it can realise learning targets as established in music

curriculums. Soundbeam has been successful because of its sensitive beam which allows any performer to play freely, regardless of their mobility and because it allows a vast number of sounds to be used, offering more freedom to the player. It can be used in the music classrooms of Cyprus in an attempt to provide inclusiveness in the music lesson, and at the same time educate students in relation to SbM, as it allows for any sound to be used within its interface.

Ellis (2004) has been utilising Soundbeam's technology in special education, during his research and development of a therapy named 'Sound Therapy'. Sound Therapy positions "children at the centre of the activity" (ibid: 113) and through this research, which has a strong focus on sound, the CARESS project was born. CARESS (Creating Aesthetically Resonant Environment in Sound) aims to:

"Enable young children to learn and develop physical and cognitive skills by interacting with responsive sound environments. The combination of a sensor and a sensor-to-sound interface provided the means for exploring interaction and creativity with sound, within a controlled sonic environment" (ibid: 114).

Through CARESS more interfaces were researched in special as well as mainstream schools. This allowed for new technology to be used within the Sound Therapy framework, which could be used in both school environments. Several classroom projects were developed and tried out within the CARESS project with students between 4-8 years old, which were tailored to fit within the English national curriculum and were appropriate again for both mainstream and special needs schools (ibid: 121). These "game projects" developed within schools introduced sound as a distinct element that could be used in cross-curriculum lessons, such as art, drama and dance, and allowed students to gain control over their learning.

Technology for young people used in both special and mainstream environments could facilitate the learning of SbM in the music classrooms, but most importantly could engage the learner and allow for knowledge and freedom of expression through the use of sound. Such technology would be extremely useful in schools and it could be used as part of the SbM lessons, but this depends on the resources and funding of the schools and the teachers' background, as identified in previous chapters.

Summary of educational theories and strategies relating to education

The above section confirmed that the SbM lesson plans will follow the constructivism learning approach for the creation of the lessons. Throughout these lesson plans creativity is considered essential and strategies identified above will help the structure of the activities in order to engage students in the learning process. Imagination and enjoyment are also considered as important elements of the lessons as well as freedom of the students during the activities. In addition, the researcher identified the need to use different domains as part of the lessons to create an inclusive environment and that using technologies could engage even the NTM students in participating during the SbM lessons. All these theories will support the structure of the SbM lesson plans.

The following section will discuss the theories that will inform the content of the SbM lesson plans. Combining the theories outlined above with the theories relating to SbM and specifically to listening, composing and performing strategies, the researcher will create the SbM lesson plans that are going to be implemented in schools.

4.3. SbM listening, composing and performing strategies

The current research aims to introduce SbM in the public music classrooms of Cyprus. In order for the implementation of SbM to take place in schools, the lessons need to follow the structure of the music curriculum of Cyprus. Currently, following the ERP, the music curriculum is divided into three sections, namely listening, composing and performing. The following section focuses on these three areas in relation to SbM.

For each key area, the basic ideas and techniques used within SbM, which are considered as the most appropriate to be used in a music classroom are presented. Highly specialised techniques of composition are not presented in the present thesis, as this section is intended to be used in the creation of the SbM lessons plans that are going to be implemented in the music classroom by teachers with no prior knowledge of SbM. The presented theory, strategies and techniques need to be approachable and understandable by the teachers. The discussion will commence with the listening strategies that will guide the SbM lesson plans.

4.3.1. Listening strategies

The act of listening in SbM is considered as important and crucial as the sound itself. SbM primarily uses sounds, therefore listening training needs to be employed so that students can identify and focus upon sounds. Thus, aural aspects have become central for the creation of SbM as well as other genres that are primarily involved with sound.

The most important “instrument” that can identify the sounds, is our ear, but “what matters most is *how we listen*” (Hugill, 2008: 15)(his italics). Many researchers focused on identifying *Listening Strategies*, and one of the pioneers was Pierre Schaeffer. Schaeffer in 1966 published the four “modes of listening”. These modes as explained by Hugill are:

1. ‘*Ecouter*’: is the focus of the listener on identifying the cause and its source including any additional information or message that it carries.
2. ‘*Ouïr*’: is the passive listening of a sound, without trying to understand it or pay any attention to it. Ex. Everyday background noise.
3. ‘*Entendre*’: is the focus on the intrinsic characteristics of the sound. Schaeffer also called it ‘reduced listening’ because of the fact that you listen to the sound ignoring any references or associations it may convey.
4. ‘*Comprendre*’: is translated as understanding, thus is the listening mode that is used to grasp the sound’s meaning and its values. The sound is used as a language or a code.

(Hugill, 2008:19)

Especially for works of SbM, “*Entendre*” is the most influential mode of listening (Holland, 2011:17). The strategy of *reduced listening*, in which the sound is listened for its own sake, as a ‘sound object’ (also identified by Schaeffer), removes the source which is attached to the sound, as well as its meaning, and focuses on its intrinsic characteristics. This listening strategy leads to a greater understanding of “sonic phenomena for themselves and in themselves” (Hugill, 2008: 20). Activities following the reduced listening strategy can help students realise the potentials of sounds, away from the meaning of their source. Such activities can be included in the SbM lesson plans to enhance the listening skills of the students, and support the New Music Curriculum (2010) aims.

Another listening strategy, which aims to enhance the act of listening, but in a different way was expressed by R. Murray Schafer. Schafer, in the late 1960s founded the World Soundscape Project (WSP) at Simon Fraser University, in order to research the “acoustic

environment and the impact of technology on it" (Westerkamp, 1991:3). The aim is to identify the sounds relating to their source, which is the opposite of reduced listening.

The term Schafer used to describe the acoustical environment is "*Soundscape*". During the project many articles and reports were published along with Schafer's book "The Soundscape: Our Sonic Environment and the Tuning of the World" (Schafer: 1977). This book discusses the history of sounds as well as describes and categorises the sounds that surround us. As he describes it: "the soundscape of the world (is like) a huge musical competition, unfolding around us ceaselessly" (Schafer, 1977:205). During this investigation of the soundscape, different types of sounds were identified. The most important of these are:

- *keynote sounds* which are not heard consciously but complete the soundscape
- *signals* which are upfront sounds that are heard consciously
- and *soundmarks* which are sounds that have a special meaning and are used as an acoustic landmark.

(Hugill, 2008: 18).

Soundmarks, can reference or portray a specific environment or space. Due to this fact, this is called *referential listening* in which the focus is on the source of the sound, and is contrasting with the notion of *reduced listening* (Norman, 1996:2).

However, the contextual opposite of *reduced listening*, is *heightened listening*, which "allows for the creation of aural storytelling in which both the composer's and listeners' experience feed into an activity known in the social sciences as collective memory" (These experiences can involve any identified sound or emotional memory) (Landy, 2007: 106 & 249). Both listening strategies, which aim at different listening situations, can be used in the SbM lesson plans. The first one can be used to help students understand the musical properties of sound and the other to help them understand the importance of sounds as part of the acoustic environment/soundscape.

In 1992, Schafer published a book dedicated to the education of others around sounds and listening, entitled "A Sound Education". This book has 100 exercises concerned with sound and ways in which "teachers might help students to listen more effectively" (Schafer, 1992:7). He believes that through this exercises students will "learn how to listen" by enhancing their aural skills (ibid: 11). Schafer named these exercises as "*Ear Cleaning*

Exercises” that could be used without special training from both adults and children. Another term used by Schaefer in support of these listening exercises is *Clairaudience*, which literally means ‘clear hearing’ (“an exceptional hearing ability, particularly with regard to environmental sound”) (Schafer, 1994: 272).

Both Schaeffer’s and Schafer’s listening strategies are guiding listeners to a more *active listening* of the sounds. An active listener is the one that is guided by his curiosity and seeks to understand the sounds around him, in contrast with the *passive listener* (Hugill, 2008: 21). Especially with people involved with music, having the skills to be active listeners is essential. Being able to understand the sound is fundamental for the development of ‘*Aural Awareness*’. Aural awareness, as the term suggests, is about being able to respond to and understand the sounds that surround you. SbM composers use both active listening and aural awareness when they select and decide how and when to manipulate or present their chosen sounds in their compositions. As reported by Hugill (2008) “aural awareness is an invaluable skill for the musician who works with new technologies” too, as sound-manipulation through any digital mechanisms or computer software, requires the skill of listening in order to take the necessary decisions (2008: 22). The New Music Curriculum (2010) of Cyprus aims to support active listening, thus the focus of the SbM activities will be on the act of listening and develop the students’ aural awareness through listening exercises which will focus both on reduced and heightened listening.

Listening theories and strategies exist to guide not only the listener, but also the performer and/or composer, to use sounds in a meaningful way. There is a number of different listening strategies, each one aiming to help the listener understand the sound and then decide how to use it. Thus, it is important for students to learn how to listen and focus on listening first, in order to learn to appreciate, understand and protect their surrounding sounds, before moving towards composition or performance. These listening strategies can relate not only to listening exercises but also to compositional exercises.

4.3.2. Compositional theories

Compositional theories in SbM often rely upon reduced/active/expanded listening strategies. SbM compositions use listening strategies, not only for choosing the sound material but also for guiding the compositional process. The compositional process of SbM can also be categorised, on the basis of the techniques of composition used (ex. collage or plunderphonics), the forms of technology used (ex. analogue music, computer music) and/or in relation to sound generation (ex. electronic music).

This research aims at identifying the simplest way to approach SbM composition. This is important for music teachers to be able to teach this compositional approach towards SbM without any background either in music technology or SbM. Additionally, the chosen compositional approach needs to be simple and less scientific, in order to be introduced to students between 9 to 14 years of age.

The researcher identified that the most appropriate way to categorise SbM compositions, in order to be used within the music curriculum, is in relation to sound. The listening exercises will add to the knowledge of the students and help them understand this categorisation, which does not include any scientific terms or complex compositional strategies.

In relation to sound, SbM can be categorised in relation to the use of:

- Real-world sounds (can be processed but still recognisable, possibly having referential characteristics to their source)
- Synthesised or generated sounds (these are computer generated sounds)
- Both real-world sounds and generated ones

The following three sections examine the basic compositional strategies that utilise these three different types of sounds. In relation to what is basic and what is not, the strategies presented below are the ones that can be used in the music classroom and be understood by students. Thus, specialist compositional strategies, such as granular synthesis, stochastic synthesis or glitch composition, are not presented in this thesis.

4.3.2.1. Real-world sounds in SbM compositions

The basic SbM subgenres that use real-world sounds in their composition are:

1. Musique concrète composition
2. Acousmatic composition
3. Soundscape composition
4. Text-sound composition

Primarily *musique concrète* is the term used by Schaeffer to describe the use of recordable sounds in his compositions, thus real-world sounds. *Musique concrète* is focused on the quality of sounds, and is not concerned with their source. It does not use

any electronically generated sounds and, as identified before, musique concrète has been referred to as the opposite of “*elektronische Musik*”. Even though the sounds used in musique concrète compositions are recordable, the composer is not concerned with their identification by the listener, but only the quality of the sounds. The sounds used in the composition are considered “worthy of being used in a musical context” (Landy, 2007:74). Musique concrète moves away from the cause or source of the sound and focuses solely on the sound itself.

Usually, musique concrète has a “narrative discourse”; like a voyage for the listener, or, as Michel Chion described it, the “cinema for the ear” (*cinéma pour l’oreille*) (2002). It does not have a specific structure of composition and has been described as using new and liberating methods (Francis Dhomont quoted in Landy, 2007: 75). This music is unquestionably linked to Schaeffer’s reduced listening techniques. The focus on the sound rather on the source is exactly what separates this compositional strategy from other terms used to describe similar works of composition. The “cause” of the sound is not of fundamental importance, as a result of reduced listening (Landy, 2007:75). Michel Chion also explained that the word concrète used by Schaeffer was exactly to focus on the use of concrète sound material, in order to abstract its musical values (ibid: 77). Musique concrète can be used in the SbM lesson plans as part of the exercises of reduced listening, as well as through listening examples, which use real-world sounds in composition. This could support students’ learning by giving them not only the theory on reduced listening but also an actual listening example.

Another term used by Pierre Schaeffer and Jérôme Peignot is “*acousmatic*”. This term is linked with the method of teaching used by Pythagoras. He was behind a curtain separating him from his students, in order for the students to focus on the sound of his voice, not his image. Taken as a term by Schaeffer and Peignot, acousmatic was used to describe works using real-world music, within musique concrète, without any visual materials.

Acousmatic listening is hearing the sounds without their visible source, which is the opposite of direct listening, which is the natural situation, when the sources of the sounds are visual. This listening situation, without any visual sources, could assist a reduced listening strategy. The sounds then become sound objects, which after repetitive listening, can “exhaust the curiosity around causes and make the sound object worthy of listening for itself” (ibid: 78). Even if the term acousmatic was firstly introduced within musique concrète, it is now being used to describe works of SbM that do not have any visual

references. Nowadays, acousmatic composers do not fully follow the reduced listening strategy, but rather use sounds not only for their quality but also for their referential characteristics of their cause or source. Within the SbM lessons, activities during which students have their eyes closed, can relate to acousmatic listening and can also add to the understanding of musique concrète composition.

A contrast with musique concrète is soundscape composition, which involves recognisable sounds and sources. *Soundscape composition* refers to a kind of SbM in which “environmental sound recordings from both the source material and also inform the work at all its structural levels in the sense that the original context and association of the material play a significant role in its creation and reception” (Truax, 2000: 124). Truax supports that in soundscape composition ‘the piece never loses sight of what it is “about”’ (Truax, 2000: 124). Thus, the context and source identification in soundscape composition is of primary significance. *Soundscape* is the term used for both abstract and real environments of sound, and defines how an individual or a society understands these.

Soundscape composition emphasises on the subjective interpretation of the composition, providing *referential listening* and *contextual listening* (Norman, 1996:2). With this in mind the source of the sounds is provided, even if it goes under manipulation or transformation, and the listener interprets them in relation to his knowledge of the environment in order to assign meaning to the composition (Truax, 1996: 63). The maintenance of the sound source in the composition and the subjective interpretation of the composition by the listener are two of the four principles of soundscape composition. The other one is in relation to the composer’s chosen structure; his understanding of the environment and the psychological context of his sound material, which is influenced by the chosen soundscape, influences the structure of the composition, as these become part of the composition. The last one focuses on the understanding of the world by the listener, as the soundscape composition tries to enhance the listeners’ understanding of the environment and influence their daily perceptual habits (ibid). Soundscape composition activities can be used in SbM lessons to help students realise more about their acoustic environment and the act of composing relating to it.

Soundscape composition is closely linked with the balance of the listener with its sound environment as well as with the awareness of sound pollution. This leads to Schafer’s Sound Education, in which the “Ear cleaning” techniques and “Clairaudience” were presented in combination with another key aspect of soundscape studies: the *Soundwalk*.

Soundwalk is a walk during which someone listens attentively to his/hers sonic environment. This might also guide the soundwalkers to determine the route of the walk and they can at the same time record sound material for a soundscape composition. Soundwalk is a very important activity for students during which they can observe sounds and identify issues regarding their chosen soundscape. Such activities will be included in the SbM lesson plans in various age groups, as they can be understood by younger and older students alike.

Another basic SbM composition that engages real-world sounds is *text-sound composition*. This composition involves text, which is primarily intended to be heard, not read. It has evolved from poetry but can be described as part of a SbM composition when “voice is the only or key sound source” (EARS site: text-sound composition). Like a sound object, text-sound composition uses the notion of phonemic object. This happens when voice recordings are broken down in phonetic blocks and are used as sound sources of the composition (EARS site: phonetic object). This particular SbM composition could be one of the first engagements of students, when introduced with SbM, as they can experiment with a unique instrument, their voice.

Having all the above SbM compositions using real-world sounds in mind, we can identify that any sound can be used as a compositional material:

- Environmental sound
- Human sound
- Mechanical sound (including recording noise)

These three categories can be further divided in two types of sounds: artificial and natural. Natural sounds include human and environmental sounds, whereas artificial sounds are the ones created by human-made objects. These two categories can help students listen and discuss about the sounds around them and probably distinguish and record them for their compositions. Composing with real-world sound is considered as the most straightforward compositional strategy for people with no prior knowledge on SbM or the use of technologies. Thus, the SbM lessons will aim to have compositional activities using real-world sounds rather than synthesised.

4.3.2.2. Synthetically generated sounds in SbM compositions

Identifying the compositional strategies that utilise real-world sound, we move forward to the basic SbM which uses synthesised or generated sounds in its compositions; in other words “new sounds”. This is:

1. Electronic music composition

“In electronic music, excluding work by those interested in the synthetic creation of existent sounds or the creation of new sounds to be used in more traditional musical (i.e., note-based) contexts, most generated sounds are intentionally made to be perceived as new” (Landy, 2007: 120). Thus, primarily electronic music is concerned with the generation of sounds (“new sounds”) and their creation from zero.

Electronic music is the term used to describe works that do not use recorder sound materials; instead they synthesise and generate the sounds electronically. Historically this synthetic generation of the sounds was made through oscillators and noise generators, but currently this is now a digital process (EARS site: Electronic music). Back in the analogue age of SbM, hand-held electronic instruments generate electronic sounds and their performance has been included under the term of “Live electronics” (see p. 91).

Its difference from electroacoustic music lies on the fact that, as suggested by the name electro-acoustic, this music uses both electronically generated sounds (“electro”) and recorded sound material (“acoustic”). Consequently, electroacoustic music is included in the next category.

The students need time to compose electronic or electroacoustic music. There is also a need for training and development in order for the teacher to be familiar with these compositional strategies, and there are a number of teacher’s concerns relating to innovative material. These compositional strategies will only be presented theoretically to the students with listening examples, in order to avoid any teacher’s concerns relating to the SbM lessons.

4.3.2.3. Both real-world sounds and synthetically generated sounds in SbM compositions

While the above SbM strategies of composition have a clear direction and use of real-world or synthetic sounds, there is a possibility for combinations. The basic SbM subgenre that uses a mixture between real-world and synthetically generated sounds is:

1. Electroacoustic music

As identified earlier, electroacoustic music utilises both real-world sounds and generated sounds within the same composition. These sounds may have referential characteristics or be completely abstract, identifiable or not, could be new or pre-recorded (Landy, 2007), but can all be included in the composition. This mixture of “musique concrète” with “electronic music” and “soundscape composition” offers to electroacoustic composers the ability to combine a huge range of available sounds within their compositions. The way they use these sounds can also lead the composers in having “their own sonic signature” (Landy, 2007: 130).

It is possible for students to be able to create works of electroacoustic music, as proven by Savages research (2005), but this requires time and is again related to the abilities of the teachers and the classroom resources and equipment. As a result, the SbM lesson plans will focus more on composing with real-world sounds and recorded material.

4.3.3. Performance space

The compositional strategies, which are concerned primarily with sound, are included within SbM and, as all of the abovementioned ones are characterised as sub-genres of SbM, this makes SbM a supergenre (Landy, 2007:175). Within this SbM “supergenre” (ibid), there are some new ideas of performing, which move beyond the traditional music concert hall. These ideas are linked with specific techniques of performing SbM identified by their performance space. SbM performance is primarily linked to spatial awareness. Spatial awareness has been characterised as one of the “twentieth century revolutions in music” (Landy, 2007:219) due to the technological possibilities that are now available. SbM is concerned with the spatial development of its compositions, while composers use techniques to gain more spatial awareness.

For the purposes of this research, the focus turns to the performance space, which is easier for students to grasp. This section will primarily deal with performance taking place in a real or virtual space. “Real space” includes traditional venues, such as the concert hall,

but also alternative spaces beyond the concert hall, whether virtual space mostly refers to the use of the Internet as a performance space.

4.3.3.1. Real performance space of SbM

Within the category of the real performance space the following performance strategies can be used:

- Loudspeaker placement
- Sound diffusion
- Sound installation
- Live-electronics

Within the *concert hall*, *loudspeaker placement* of more than 2 speakers in the performance area became an “ordinary” phenomenon. This was particularly popular after Varèse’s performance in the Philips Pavilion in 1958 with the “Poème électronique” where hundreds of loudspeakers surrounded the pavilion. This loudspeaker placement offers the dimension of depth to the sound, making steps towards spatial awareness.

SbM performance moves beyond the stereo configuration of the loudspeakers and explores performance techniques utilising more than 2 loudspeakers. *Quadraphonic* is the term assigned to the use of a four-channel sound-around system, which are usually positioned in the four corners of the performing space. Other configurations, such as the “*ring of eight*”, which positions eight loudspeakers in a circle around the audience, might be used in the performance space, but there are purpose-built spaces that use even more loudspeakers. Simon Emmerson expressed his wish for a “Sound House”, which will be a multipurpose arts venue for SbM performance (Emmerson, 2001). Such performance areas do exist, such as the Acousmonium of the Groupe de Recherches Musicales in France, the BEAST (Birmingham ElectroAcoustic Sound Theatre) in Birmingham and the concert hall of IRCAM (Institut de recherche et coordination acoustique/musique) in France. Almost every concert hall that performs SbM is equipped with a flexible number of loudspeakers. This loudspeaker placement leads to “imaginary landscape(s)” as described by the Trevor Wishart (1996), in which sound is repositioned in another space, which is not the source.

In the music classrooms it might seem utopian to have multiple loudspeakers, but with surround sound systems, loudspeaker placement might be an option. Once again this relates to the resources and the funding of the school.

This loudspeaker placement offers the possibility for *sound diffusion*. Sound diffusion is the distribution of sound to multiple loudspeakers, which is usually taking place in real-time with the performer having control of the volume, the spatialisation of the sound and balance of the performing composition (Truax, 1999). Nonetheless, diffusion of a SbM could be mixed in real-time or programmed over a multitrack recording. When the loudspeakers are distributed particularly for spatial diffusion, having focus on the front, then the name “loudspeaker orchestra” can be used. This is a French concept referring to the loudspeakers representing the ‘members of an orchestra’ (EARS: Loudspeaker orchestra). Real-time sound diffusion offers improvisation of the spatial motion of the composition, but could be also used in combination with live manipulation of instruments or sounds.

Other performance strategies of SbM support John Cage’s ideas of the ‘world as a concert hall’. Cage focused on listening of sounds and the opportunity to listen at any place; the world is the concert hall and any place is a potential concert hall. SbM takes this idea and uses alternative performance spaces, outside of the concert hall and into the art galleries, streets or even trains; it becomes a public art (Landy, 1991: 110). Public art attracts more people that would not usually listen to SbM, to experience it and interact with it. This is usually realised through *sound installations*. Sound installations could take place in or out of a concert hall and are in a way sound sculptures designed to present an aural experience to the public. Usually sound installations are used within visual art exhibitions or site-specific works, and the listener can experience it at any random starting point, as it usually does not have a starting or ending point (EARS: Sound installation). When the sound installation is characterised as site-specific, then this suggests a particular link with a specific geographical location, where it is meant to be performed. The sound installation could be also interactive, triggered by the audience or the space positioned in. “What is clear is that the concert hall is not SbM’s sole performance space” (Landy 2007:164) and having public art, such as installations outside of the concert hall, increases the access of SbM. Sound installations can be positioned in schools, too. However in Cyprus there are not so many sound-installations, but this could be a motivation for introducing SbM to students in a more artistic way.

A performance strategy that could be used inside or outside the concert hall is the performance of “live electronics”. Of course, “live” does not refer to the electronics, but rather the performance situation. In live electronics, as described above (see p.90), electronic instruments generate electronic sounds and are usually performed live. This situation links back to the analogue age of electroacoustic music (EARS site: Live

electronics), but adds a new dimension to the performance of SbM: live interaction, manipulation and improvisation with electronic instruments.

4.3.3.2. Virtual performance space of SbM

Moving forward to examine the use of virtual space in the performance of SbM, we must explore the use of the Internet. SbM is developing quickly in the virtual dimension of the cyberspace. A performance strategy that flourishes in the Internet in relation to SbM is the “collective Internet performance” (Landy, 2007:167). The Internet is used as a protective space for cultural diversity, in which collaborations involving sound organisation could be formed in order to “discover and develop new ‘network sound aesthetics’” (Cubitt, 1997: 45).

Alvaro Barbosa (2003) has created a classification axis for music creation within these network systems, where he deals with synchronicity and location. In the cases where the location is different but the interaction is synchronised, he uses the term “shared sonic environments”. He particularly supports these virtual spaces, as they provide “collaborative ongoing sonic performance[s]” which “could express interesting new artistic results” (Barbosa, 2003: 58). Landy also shares this enthusiasm with Barbosa, reporting that SbM can be part of “an Internet music system” in which different interfaces and sound materials vary, leading to new hybrids and new genres within this music (Landy, 2007: 169). If schools have access to the Internet, then students can experience virtual performance of SbM and possibly contribute to this. However, this again relates to the equipment and sources in each school.

Summary of the SbM theories relating to listening, composing and performing.

This section presented different listening, composing and performing strategies that can guide the content of the SbM lesson plans to be used in the music classrooms. Because of the fact that the research takes place in primary and secondary schools of Cyprus, these strategies should be simple, clear and understandable as well as available for students and teachers. Thus some of the above strategies might not be possible to be implemented as part of the SbM lesson plans because of issues relating to equipment of schools, funding as well as teachers’ training and background.

The researcher identified that is essential for the SbM lessons to provide listening exercises to enhance the students’ aural awareness, and also to guide them through the compositional process of composing SbM using recorded material. Also, the lessons will

provide performing opportunities for the students, when they will be able to perform using real-world sounds rather than using instruments. All the above theories and strategies have been combined into six themes relating to SbM, which will structure all the SbM lesson plans. The following section focuses on the design of these lessons.

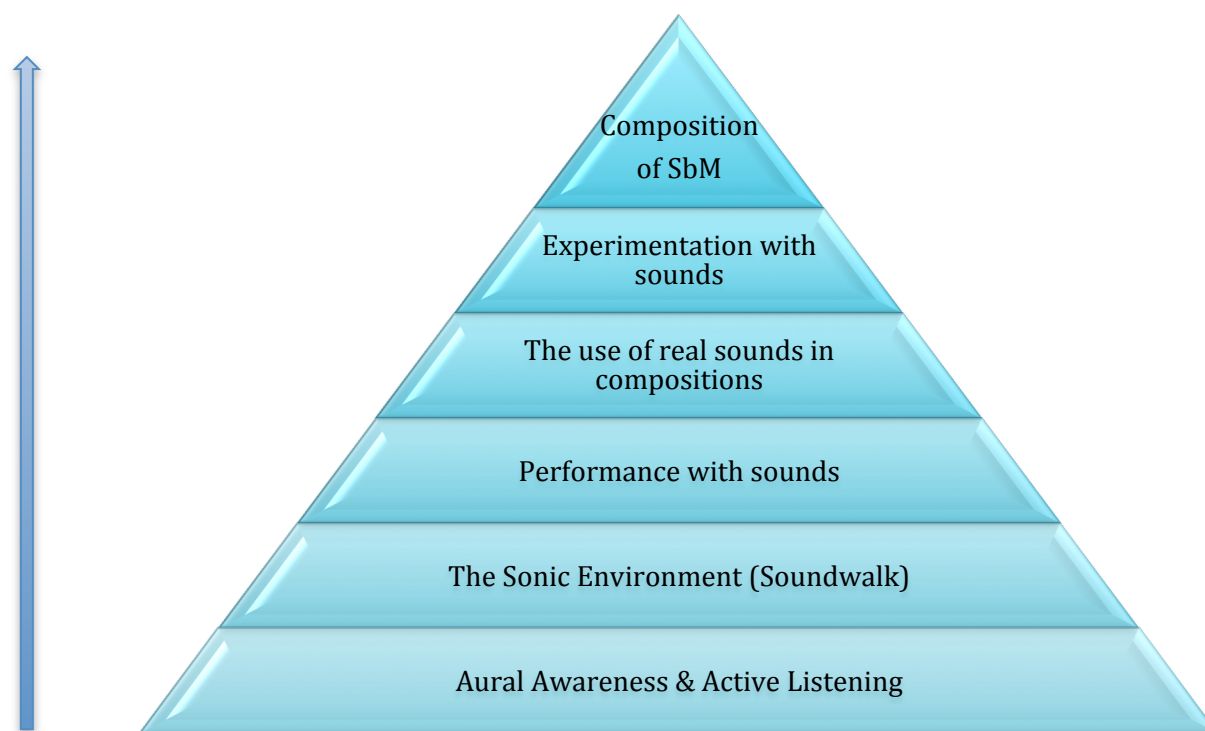
4.4. The “pyramid” design of the SbM lesson plans

The theories of listening, composing and performance identified above were used to construct the SbM lesson plans that were implemented in the music classrooms. These were guided by the learning and creativity theories presented above. Furthermore, the aims of the national music curriculum of Cyprus were taken into account, in order for the SbM lessons to support these in the music classroom (see p.29).

The lessons focused on six subject areas in relation to the theory of SbM. The six themes of the lesson plans follow a pyramid design. The base of the pyramid is providing the basic knowledge around SbM starting with exercises on listening. Up until the top of the pyramid the exercises and material used are more specific on composing SbM, thus more suitable for older students. The top part of the pyramid is about SbM composition, in order for the students to use all their previous knowledge to identify, choose, record, structure and manipulate their own SbM compositions.

The pyramid design is also used in relation to the number of lessons implemented in the six schools. It was originally designed for Case study 1 to have one lesson and up until Case study 6 to have six lessons. This changed during the research and it is discussed in the Findings Chapter 6. The following diagram shows the pyramid design, with the lesson plans and the levels of difficulty (from the basis upwards).

Figure 4.3: Pyramid of the *levels* of complexity of SbM lesson plans



The combination of these subject areas created the appropriate lessons for each age group, after the first data were gathered in Phase 2 of the research (see p. 156). The following section identifies the subject areas and content of each lesson created. In total, there are eight SbM lesson plans, which were implemented in schools.

4.4.1 Summaries of the SbM lesson plans

The SbM lesson plans follow the pyramid design presented above in relation to six thematic units of SbM, which increase in difficulty in relation to the age of the students. This section identifies the eight lesson plans created based on this pyramid design, the first three of which were used in the primary case studies and the following five in the secondary case studies. For each lesson plan, the learning theories identified as well as the basic principles of SbM in relation to listening, composing and performing were introduced through relevant activities. The following sections are small summaries of each lesson; the whole lesson plan can be found in the Teachers' Information Pack attached to the thesis. All lesson plans were created after the collection of the first data relating to the teachers' background, the schools' profiles and government initiatives, and amended throughout the duration of the case studies.

Lesson 1: Aural Awareness *

The first lesson focused on the enhancement of listening abilities and skills of students in relation to 'Active Listening' and 'Aural Awareness'. The lesson used a popular song called "Poli Chioni" as listening material. This song, performed by Philippos Pliatsikas, is regularly played on the radio in Cyprus and is thus familiar to the students. Nonetheless, it uses some real-world sounds during the composition, such as a doorbell, footsteps and bird songs, which could assist the lesson aim. The aim of the lesson was for the students to focus during listening exercises, and identify any sounds which are not usually used in compositions, such as real-world sounds. This would give them a first idea of using sounds, which are not note-based, as part of a music composition.

The exercises, which followed, were related to active listening and were based on the Ear Cleaning exercises by Schafer, which trained students to become more focused and active listeners. The lesson was then concluded with the students engaging to a more critical discussion in relation to acoustic ecology and sound pollution, explaining the notion of Aural Awareness (Teacher's Information Pack: Lesson 1).

Lesson 2: Soundwalk *

The second lesson also focused on the listening training of students through a more participatory activity, a soundwalk. The lesson focused at first on the identification and categorisation of sounds in groups in relation to artificial or natural sounds. The training exercises used sound samples of recordings of different natural or artificial sounds, and the students were asked to categorise them on their worksheets accordingly.

After the activity with the categorisation of sounds, students were asked to go on a soundwalk within the school's area. This exercise allowed students to explore the sonic environment of their school and categorise the sounds of their school's Soundscape. This lesson particularly aimed at enhancing the four key elements of creative learning: imagination, experimental learning, motivation and enjoyment through the activity of the soundwalk (Teacher's Information Pack: Lesson 2).

Lesson 3: Reduced Listening *

Lesson 3 focused on the ideas of Reduced Listening, as guided by Schaeffer. It was an attempt to educate students in relation to the musical properties of sounds, rather than their referential meaning. Thus the lesson focused on the identification of the characteristics of the sounds in relation to volume, duration, pitch and timbre. The teacher gave different sound examples and the students could discuss and agree on the different characteristics of the sounds.

Some video projections were presented to the students, which showed the performance of different music compositions using sounds in respect to their sound characteristics rather than their cause or meaning. At the end of the lesson, the students performed a sound composition, using their body, recreating the sounds of rain and thunder, using the musical characteristics of their bodily sounds. (Teacher's Information Pack: Lesson 3)

** These first three lessons were used in primary schools.*

Lesson 4: Acoustic Ecology

The fourth lesson was a combination of all three lessons used in primary schools and was used to create a basic knowledge around active listening and Aural Awareness through the use of the Soundwalk in the school. All the ideas presented in the primary schools were used within this one lesson, in order to allow students to move forward to sound experimentation and composition in the following lessons, while all having the same basic knowledge around SbM (Teacher's Information Pack: Lesson 4).

Lesson 5: Real-world sounds in compositions

Lesson 5 was on the use of real-world sounds in SbM compositions. It was aimed at educating students in relation to musique concrète and its tradition. The lesson focused around the listening of SbM compositions that use real-world sounds. The chosen music compositions were:

- To BBC or NOT (by Leigh Landy)
- Peep Show (by Peter Cusack & Max Eastley)
- Etude aux objets 1er Mouvement (by Pierre Schaeffer)

The compositions were purposefully chosen in order for the students to realize the potentials of the use of sounds in a range of SbM compositions. The first piece "To BBC or NOT" uses samples of different voices from the BBC radio, helping the students to realize that the human voice could be used as a musical material. The composition of "Peep Show" was used for its recognizable sounds, which resembled the sounds of a Greek soundscape. It was important for students to be able to relate some of the SbM with something familiar, and this specific composition allowed them to identify the possibility to create SbM compositions from different soundscapes, starting from something more familiar. Etude aux objets 1er Mouvement uses real-world sounds from objects and gives a listening example to students around the traditional composing of musique concrète.

The last activity of the lesson focused on the creation of a sound-story from the students. Divided into groups, students were asked to bring objects from home and to create a sound-story with these. Then, they would perform their sound-story in front of the classroom and record their performance. The lesson aimed at introducing to students

different ideas of composing SbM as well as giving them the opportunity to experiment with real-world sounds and record their performance (Teacher's Information Pack: Lesson 5).

Lesson 6: Music technology

Lesson 6 was a more practical lesson on using the musical software 'Audacity' and its functions. Audacity is a free and accessible program, which allows the user to import and export audio files and manipulate them using the effects provided. The effects and utilities of the software described in this lesson are considered as basic. This allowed students to use the software and practice at home, after receiving the basic training on this software in the classroom. The basic functions used in the lesson are: echo, reverse, delay, stretch, cut, paste, delete, mute, solo, drag and drop.

This lesson aimed at helping students realise the potentials of using technologies and the compositional process of using recorded material as part of a music composition. The students' recordings from the previous lesson were used as the basic sound material. This allowed students to take decisions relating to their own unique sounds and manipulate and explore their possibilities using music technology (Teacher's Information Pack: Lesson 6).

Lesson 7: Synthesised sound and image

Lesson 7 was used only for the second grade of Secondary school and evolved around artificial sound and image, focusing on some historical information around electronic music. The lesson used the composition "Sinus" by Bret Battey as an example, and the exercises involved some critical discussions on the link between the sounds and image. The teacher also explained that sounds were synthetically composed rather than being real-world sounds. This led to discussions on the two opposing traditions of *musique concrète* and *elektronische Musik* and their contemporary applications like cinema and sound design (Teacher's Information Pack: Lesson 7).

Lesson 8: Sound-based music (Revision)

The last lesson plan, Lesson 8, was an addition to Lesson 7 and was created for the third grade of Secondary school. For this lesson, additional audio-visual material, composed by the researcher using both real-world sounds and synthesized sounds, was used. This composition related to the history of Cyprus and the coup d'état of 1974. With this piece, called "Mi.ss.ing", the lesson led students to a discussion relating to the use of both real and synthesized sounds in SbM composition as well as discussions around music and social/cultural issues. The aim was not only for students to realise the potentials of sounds as compositional material, but also the abilities of SbM compositions to address current social issues (Teacher's Information Pack: Lesson 8).

(The researcher implemented these lesson plans in both primary and secondary schools in the Greek language. The terminology used in Greek and the instructions for the software Audacity can be found in the Appendix D and E accordingly.)

4.5. Summary

This chapter presented educational and SbM theories that guided and supported the creation of the SbM lesson plans. These theories aim to enhance the New Music Curriculum (2010) targets by supporting the teaching and learning of SbM in the music classroom. The SbM lessons followed the constructivist approach of learning, which is also supported by the MoEC and the New Music Curriculum (2010).

The chapter identified the pyramid design of the SbM lesson plans, which guided the creation of the lessons, based on six thematic units relating to SbM. This pyramid design also revealed the levels of difficulty that were implemented according to the levels of education. Furthermore, the chapter outlined a summary of each SbM lesson created for the purposes of this research project.

The following chapter presents the methodology guiding this research. It identifies the research methods, the methods of data collection, the sample of the research as well as the analysis strategy followed by the researcher throughout this project.

Chapter 5: Research Methodology

5.1. Introduction

This research project investigates the implementation of a series of SbM lessons in the music curriculum. These SbM lesson plans, as outlined in the previous chapter, are used in a series of case studies, following a grounded theory research methodology. This methodology enables the researcher to identify factors, which facilitate and hinder this implementation in schools. The research focuses on both students and teachers' reactions towards these SbM lesson plans, identifying themes that can be used in order for these lessons to be evaluated. After the analysis of these themes, conclusions are drawn in relation to the applicability of these lessons for the New Music Curriculum (2010), which is currently evaluated by the MoEC during the ERP.

5.2. Research

Research is defined as “seeking through methodical processes to add to one’s body of knowledge and, hopefully, to that of others, by the discovery of non-trivial facts and insights” (Howard and Sharpe, 1983:6). Interdisciplinary research combines two or more areas in one investigation and seeks to discover new insights and facts related to those areas. This research being an interdisciplinary research combines the SbM area with that of music education, thus this research follows the principles of “educational research”. Educational research falls in the context of ‘social research’ sharing views with the social sciences (Cohen et al 2007:7; Opie, 2004:3). In social research there are two opposing conceptions focusing on social reality, representing “different ways of looking at social reality and are constructed on correspondingly different ways of interpreting it” (Cohen et al 2007:7). These two conceptions represent two paradigms, the normative and the interpretive paradigm, also known as the positivistic and interpretivist approaches.

5.2.1. Research Paradigms

In most disciplines, every research project is designed and conducted under a certain methodological framework. A methodological framework provides each research project with a stance the researcher needs to take regarding his/her view of the world and social reality. Bassey (1995) suggests that “a research paradigm is a network of coherent ideas about the nature of the world and the function of researchers, which conditions the

patterns of their thinking and underpins their research actions” (1995:12). This research project aims at investigating the implementation of SbM lesson plans in the ‘New Music Curriculum (2010)’ of Cyprus, thus promoting curricular change and innovation. Despite acknowledging the two dominant paradigms of the social sciences, the positivist and the interpretivist, the most suitable research paradigm to be engaged in this particular research project is the critical paradigm. It is mostly employed in educational research aiming to explore and suggest curricular changes combining key elements of both dominant paradigms. It can be identified that the critical paradigm is very important for curriculum research and, as identified by Cohen et al (2007), “its impact on curriculum research has been far-reaching” (2007:31).

Important in educational research and, especially in research focusing on innovation, is theory generation. Critical theory, influenced by the work of Habermas (1984), is focusing exactly on the understanding and investigation of certain phenomena with a view to bring changes to them; “in particular it seeks to emancipate the disempowered, to redress inequality and to promote individual freedoms within a democratic society” (Cohen et. al 2007:26). Critical theory is used within the critical paradigm and identifies what are the problems that affect the power of individuals or social groups leading to relative powerlessness. The main outcome of critical theory research is to “transform society and individuals to social democracy” (ibid).

In educational research the use of critical theory and critical educational research has also been used to investigate the relationship between school and society. One of the most interesting aspects of this relationship is the examination of many aspects of curriculum and knowledge. Cohen et. al. (2007) support that critical educational research is significant in investigating:

“the social construction of knowledge and curricula, who defines worthwhile knowledge, what ideological interests this serves, and how this reproduces inequality in society; how power is produced and reproduced through education; whose interests are served by education and how legitimate these are” (2007:27).

Critical pedagogy was also influenced by the work of Habermas (1972), who argues that educators, who have the power to teach curriculum, must not impose their power over the students but rather work with them and help them become free citizens (Cohen et al 2007:32). Even if critical pedagogy and theory has been criticised for being “a

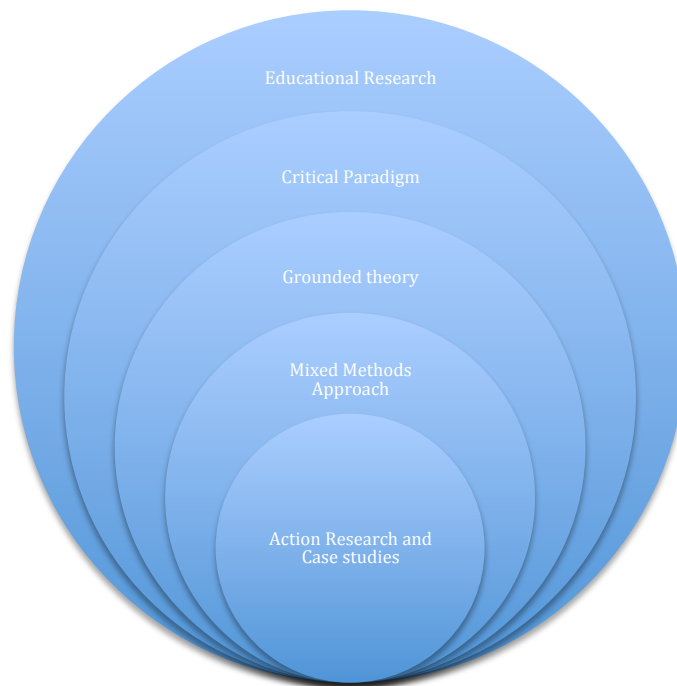
philosophy of science without a science" (Miedama and Wardekker, 1999:68-75), it is supported that its importance is the ability to recognize whether there are problems in the curriculum, which require investigation, evaluation and solutions (Cohen et al 2007:32).

Using critical educational research methodology, this research can identify what empowers or hinders music teachers in teaching SbM lessons in their classrooms and how the Cypriot music curriculum determines that these lessons should be taught. Employing the critical theory in this research the researcher does not simply accept the findings of the research, but seeks to question and transform them (Cohen et al 2007:27).

The critical paradigm also allows the use of mixed methods in the research. The ability to use mixed methods within the critical paradigm affects this research's choice of research methods. In particular, this research utilises a mixed methods approach, incorporating both qualitative and quantitative tools. A mixed methods research allows the researcher to "combine techniques, methods, approaches, concepts or language into a single study" (Johnson and Onwuegbuzie, 2004:17). Consequently, this research is applying a combination of research strategies: the action research and the case study approach. Using a case study approach with an action research strategy allows the research to have distinctive case studies that can be evaluated, developed and re-examined in order to allow change and saturation.

The present research is conducted following the principles of grounded theory. Grounded theory is an approach developed by Glaser and Strauss (1967) and it is used for educational research. This theory was based on the view that "the study of human beings should be scientific, in the way understood by quantitative researchers" (Travers, 2001:42), but in situations used by qualitative researchers. Its importance lies in the fact that the theory emerges from the analysis of the data, and the research moves back and forth between description and explanation (Hitchcock and Hughes, 1995:174); hence the theory is grounded on the data. The grounded theory emphasizes the importance of "empirical fieldwork" and the development of theories based on it (Denscombe, 2007:89).

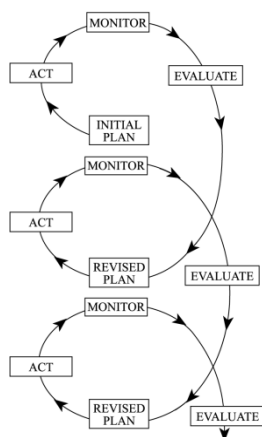
Figure 5.1: The methodological framework of this research project



5.2.2. Action research

Action research is “a cyclical research and development procedure that moves from problem to goal, through action to reflection on the result in relation to the goal, and then moves forward by revising action or goal or both” (ibid).

Figure 5.2: Action research spiral



(Kemmis ,1982)

Within the critical education research paradigm, action research is one of the most commonly used methodologies (Cohen et al 2007:30). Action research as a methodology follows the ideas of critical research, as “it seeks to develop and implement change” (Newby, 2010:61). However, in this research, it is used as a “strategy” rather than a method (Denscombe, 2007:123). It is conceived as a strategy, because it informs research in relation to the design and its aims, not data collection (ibid).

There are three approaches to action research, as identified by Zuber-Skerritt (1996: 4-5), the technical, the practical and the emancipating action research. This research is following the emancipating action research approach. This approach is a combination of the technical approach, which aims to “improve effectiveness of educational ...practice” with the practical one, which in turn aims to develop the educators professionally and to transform and change the system itself (ibid).

The combination of the emancipating action research approach with the case study approach can contribute to the development, understanding and improvement of the educational practice of those participated in the case studies through the use of feedback, evaluation and refinement action of the action research’s cyclic mode.

5.2.3. Case study

The case study, as argued by Hitchcock and Hughes (1995), “is in many ways the most appropriate format and orientation for school-based research” (1995: 316). The case study is evolving around the investigation of an in-depth case or a series of linked cases over a specific period of time (ibid: 317, Newby, 2010:51; Denscombe, 2007:36). This research is employing a multi-site case study, which includes a selection of six schools (see Sample p:108). The aim of a case study is to “illuminate the general by looking at the particular” (Denscombe, 2007:36). This research needs to investigate relationships and processes in the music lesson and music curriculum, for which the case study is the most appropriate research method (ibid). Hitchcock and Hughes (1995) argue that “in educational evaluation or research, a case study may study and portray the impact in a school of particular curriculum, innovation, explore the experience of a staff development [and] trace a development of an idea through a number of social organizations....” (1995:321). The case study approach has proved to be extremely useful, particularly for this research, which aims at providing an alternative way of music teaching and learning (ibid:322).

In relation to this research, the choice of multi-site case study is considered a choice of a research design (Yin, 2009: 53). A multi-site case study is chosen, because:

- it allows the use of multiple research methods (Denscombe, 2007:37), including both quantitative and qualitative methods for data collection,
- “the overall study is ... regarded as being more robust” when there are evidence from multiple cases (Yin, 2009:53; Herriott and Firestone, 1983),
- the findings can be generalisable (Denscombe, 2007:43; Hitchcock and Hughes, 1995: 323).

This issue of generalization, as argued by Denscombe (2007), can be “defended” using three arguments (2007:43-44):

1. Each case, even if it is unique, it is also “a single example of a broader class of things” (ibid). As an example, in this particular research, the choice of three state primary and three state secondary schools in Cyprus as case studies (to be identified in detail in the following section) is justified on the basis that they are treated as instances of other state primary and state secondary schools in Cyprus.
2. If the case studies are identified as having **significant features** on which comparison can be made with others in the same class, then the findings can be extended and be applicable to the other cases of the same class (ibid). These features are present in the case studies.
3. Generalisation of findings is also according to the **relevance of the findings** of each case study to other instances (ibid).

By the term ‘use of mixed methods’ it is meant the use of action research within the case study approach. Yin (2009) argues that “mixed methods research forces the methods to share the same research questions, to collect complementary data, and to conduct counterpart analyses –in short, to follow a mixed methods design” (2009:63).

To sum up, this research uses the critical paradigm and involves a mixed methods approach. The choice of mixed methods approach is combining multi-site case studies and action research approach. In this mixed method research, the tools that are used are both qualitative and quantitative: interviews, observations, documents, and questionnaires (Table 5.1).

Table 5.1: Research methods

RESEARCH METHODS				
Case -studies	Interviews	Observations	Questionnaires	Documents
6 schools (3 primary/ 3 secondary)	Structured	Semi- structured	Structured and semi-structured	Visual images and videos Evaluation documents Tests

5.2.4. Sample

Purposive sampling has been employed in this research in order to establish variation and variety of schools, students and teachers. Additionally, purposive sampling has been employed in order to promote comparison between case studies. Flick (2007) suggests that purposive sampling is the deliberate selection of case studies that allow for the investigation of the “research problem” in the most instructive way (2007:27).

In total six schools were selected using this method of sampling. These schools represented different types of case studies, following the concepts of theoretical sampling of grounded theory, in which sample decisions were taken during the progress of the research using a step-by-step logic (ibid: 26). Theoretical sampling is “the sampling procedure used in grounded theory research, where cases, groups or materials are sampled according to their relevance for the theory that is developed and on the background of what is already the state of knowledge after collecting and analysing a certain number of cases” (ibid: 120). A need for heterogeneity in the sample guided the selection of the case studies and consequently the schools were separated equally in three primary and three secondary schools as well as in rural and urban schools, three of each.

The choice of teachers in each school was made again purposively to promote diversity. Out of the six teachers one was a general teacher, another one was a general teacher with specialty in music and the rest were specialist music teachers, one of who was teaching in primary schools. This sample represented all possible examples of music teachers in primary and secondary schools of Cyprus, as outlined in Chapter 2 (see p.18).

In relation to the sample of the students, the selection was based on the child development theories of Piaget (1951) in combination to the children's music development theory of Swanwick and Tillman around musical development (1986) as well as the "open-earedness hypothesis outlined in the literature review in Chapter 3. (see p.54).

Table 5.2: Piaget and Swanwick and Tillman theories:

STAGES	Piaget's child development theory	Swanwick and Tillman's child's music development theory
1.	Adaptation (Birth-2 years)	Sensory/manipulative mode (Birth-4 years)
2.	Pre-operational (2-7 years)	Personal/ vernacular mode (4-9 years)
3.	Concrete operational (7-11 years)	Speculative/ idiomatic mode (10-15 years)
4.	Formal operational (11 years +)	Symbolic/systematic mode (15 years +)

As shown in the table above, in both theories the last two stages (3 and 4) have a major development in relation to cognitive and musical thinking and the students are in a more developed stage in general. This allows for experimentation with new material, with formal operations and in a systematic way. Furthermore as suggested by Kopiez and Lehmann (2008), reactions to music are age-related and, according to Kodály (1929), "a child is most open to new influences up to fifteen years of age after when it becomes increasingly difficult to develop a new creative talent" (cited in Landy, 1994 :24) (see p. 54).

5.2.5. The design of the multi-site case studies

In this research, the multi-site case studies are designed to be comparative. Each case has distinct characteristic, "deliberatively and knowingly varied, in order to assess the significance of the differences" (Newby, 2010: 54), following a purposeful sample strategy.

There are several multi-site case approaches that can be used, but for this research the chosen approach for the multi-site case study is that of the replication approach. The replication approach is sharing two logics: the literal replication and the theoretical replication (Yin, 2009:54). The literal replication "predicts similar results", where the

theoretical replication “predicts contrasting results but for anticipatable reasons” (ibid). This particular research aims to predict the results of implementing SbM lessons in several schools in Cyprus, thus approaching case studies with particular characteristics including both similarities and contrasts.

The replication approach informs the number of cases used in the research. The case study method does not use a sampling logic, as “the typical criteria regarding sample size also are irrelevant” (ibid:58). Using the replication approach the researcher decides the number of cases according to both the number of theoretical and literal replications. The number of case studies used in this research is six.

Table 5.3.: The urban and rural types of the schools

SCHOOL	URBAN	RURAL
A		✓
B		✓
C	✓	
D	✓	
E	✓	
F		✓

The choice of case–studies was based on the theoretical replication approach to cover different types of cases (ibid: 59). According to Denscombe (2007), there are three instances, which provide the researcher with “unique opportunities” in the conduct of the research (ibid: 41-42).

- Typical instance: a case is similar/typical to other cases, thus more likely to apply elsewhere (2007:40).
- Extreme instance: the case provides “something of a contrast with the norm” (ibid). This type of case study helps distinguishing the factors of influence.
- Intrinsically interesting: it can be used as a “bonus” between instances “that in all other crucial respects are equally suitable” (ibid: 41).

Summarising, the choice of schools was narrowed in the geographical area of Nicosia, Cyprus and the choice of case studies was based on the types of case studies provided by Denscombe (2007: 40-42). These case studies are selected in order to cover all aspects related to the case studies, which could influence the implementation of the SbM lessons. These aspects relate to the teacher, students and school of each case study and are identified below.

5.2.5.1. In relation to the teacher

School A: Typical instance.

The teacher is a general subject teacher, who also taught some of the music lessons. This is considered typical in primary schools of Cyprus.

School B: Typical instance.

The teacher is a general subject teacher, with specialisation in music. This is also considered as typical in primary schools in Cyprus.

School C: Typical instance.

The teacher is a music specialist teacher. This is considered as a typical case in primary schools in Cyprus, because the MoEC of Cyprus, used to appoint music teachers in the primary schools 15 years ago. Thus, there are still many music teachers in primary schools. Now only general subject teachers are appointed in primary schools.

School D: Typical instance.

The teacher is a music specialist teacher. The secondary teachers are always specialised in all the subject areas, which they teach, thus the case study in relation to the teacher is considered as typical.

School E: Intrinsically interesting.

The teacher is a music specialist teacher with a background in music technology. This case is considered as interesting because of the teacher's background in music technology.

School F: Typical instance.

The teacher is a music specialist teacher, thus a typical case.

The importance of teachers with different backgrounds, especially those with no music specialisation and the one with background in music technology, will allow comparison in relation to the teaching of SbM lessons. From this comparison, it will be identified whether the teacher's background affects the teaching of SbM in the music classroom or not. The following table shows the types of the case studies in relation to the "Teacher" perspective.

Table 5.4: Types of case studies in relation to the "Teacher" aspect

TYPES OF CASE STUDIES IN RELATION TO THE TEACHER		
SCHOOL	EXAMPLE OF INSTANCE	DESCRIPTION
A	Typical instance	General music teacher
B	Typical instance	General music teacher with specialisation in music
C	Typical instance	Music teacher
D	Typical instance	Music teacher
E	Intrinsically interesting instance	Music teacher with specialisation in music technology
F	Typical instance	Music teacher

5.2.5.2. In relation to the school

School A: Typical instance.

The school has an equipped music classroom.

School B: Extreme instance.

The school had no actual school building, as it was under reconstruction. There was a music classroom, but without any ICT.

School C: Typical instance.

The school has a new refurbished music classroom with all equipment and ICT.

School D: Extreme instance.

The school does not have ICT in the music classroom. This is considered as an extreme instance as the MoEC has supplied each secondary school with a PC in the music classroom.

School E: Typical instance.

The school has a music classroom, equipped with ICT

School F: Typical instance.

The school has a music classroom, equipped with ICT.

The available equipment in schools is considered important for the delivery of the SbM lesson plans. A comparison of the case studies will allow one to draw conclusions on the applicability of the SbM lesson plans in schools with different equipment. The following table shows the types of the case studies in relation to the “School” aspect.

Table 5.5: Types of case studies in relation to the “School” aspect

TYPES OF CASE STUDIES IN RELATION TO THE SCHOOL		
SCHOOL	EXAMPLE OF INSTANCE	DESCRIPTION
A	Typical instance	Equipped music classroom
B	Extreme instance	No actual music classroom, with no equipment.
C	Typical instance	Newly refurbished and equipped music classroom
D	Extreme instance	Music classroom without ICT
E	Typical instance	Equipped music classroom
F	Typical instance	Equipped music classroom

5.2.5.3. In relation to the students

School A: Typical instance.

The school is a rural public school and has a particularly good reputation for its students.

School B: Typical instance.

The school is a rural public school and has a good reputation for its students and a long history of good music pedagogy.

School C: Typical instance.

The school is a new established urban public school and has not yet established a reputation for its students.

School D: Typical instance.

The school is a considerable new urban public school and has a good reputation for its students.

School E: Intrinsically interesting instance.

The school is an urban public school and has a bad reputation for its students. The class that participated in the research had a 15% failure rate. The students also come from low socioeconomic families.

School F: Typical instance.

The school is a rural public school and has a generally good reputation for its students.

The focus drawn to the students of each case study is of great significance. Due to the fact that the delivery of the SbM lessons is not only related to the teachers' but also to the students' performance in the classroom, the research needs to focus on different types of students. The comparisons between different students of each case study will reveal issues related to the appropriateness of age of the students for SbM lessons, the effect of students' behaviour on the delivery of the lesson plans and the influence of the socioeconomic background of the students on the acceptance and delivery of the lessons. The following table shows the types of the case studies in relation to the "Student" aspect.

Table 5.6: Types of case studies in relation to the “Student” aspect

TYPES OF CASE STUDIES IN RELATION TO THE STUDENTS		
SCHOOL	EXAMPLE OF INSTANCE	DESCRIPTION
A	Typical instance	Rural public school (good reputation students)
B	Typical instance	Rural public school (good music pedagogy reputation)
C	Typical instance	Urban public school (new- no established reputation for its students yet)
D	Typical instance	Urban public school (good reputation students)
E	Intrinsically interesting instance	Urban public school (bad reputation students)
F	Typical instance	Rural public school (good reputation students)

The following table summarises the multi-site case studies in relation to school type, students' age range and type of teachers.

Table 5.7: Multi-site case studies

MULTI-SITE CASE STUDIES			
School	Type	Age Range	Type of teacher
A	Primary	8-9	General subject teacher
B	Primary	9-10	General subject teacher with specialisation in music
C	Primary	10-11	Music teacher
D	Secondary	11-12	Music teacher
E	Secondary	12-13	Music teacher with specialisation in technology
F	Secondary	13-14	Music teacher
Totals	6 schools	117 students	6 teachers

5.2.6.2. Data Collection

This section provides a summary of the data collection methods used in this research project, before presenting these in more detail in the following sections. It also provides a timeline of each data collection method.

1. Informal interview with the music inspector of the Secondary schools prior of the actual research.
2. Three questionnaires were given to each teacher taking part in the case studies prior of commence of the case studies.
3. Observations by the researcher were conducted during each lesson included in the case studies.
4. Video recording was used in five out of the six case studies during each lesson.
5. Photography was used during creative tasks of the lessons during the five case studies.
6. Researcher-produced tests were used at the end of each lesson of the case studies (evaluative).
7. Interviews of the teachers were conducted at the end of each lesson of the case studies (evaluative).
8. Evaluation questionnaires were completed by the students of secondary schools at the end of the case studies.
9. Evaluation interviews were conducted with the teachers of secondary schools at the end of the case studies.
10. Respondents' validation questionnaires were conducted at the end of the case studies after the generation of the findings.
11. Field notebook was kept during the whole research.

Table 5.8: Research timeline/ Phases

RESEARCH TIMELINE			
<u>No.</u>	<u>Data collection</u>	<u>Phase</u>	<u>When</u>
1	Inspector's interview	Phase 1	Pre-lesson
2	Profile questionnaires	Phase 1	Pre-lesson
3	Observations	Phase 2	Lesson
4	Video recording	Phase 2	Lesson
5	Photography	Phase 2	Lesson
6	Tests	Phase 2	Lesson
7	Teachers' interviews	Phase 2	Lesson
8	Secondary students' evaluation questionnaires	Phase 3	Post-lesson
9	Teachers' evaluation interviews	Phase 3	Post-lesson
10	Respondents' validation questionnaires	Phase 4	Post-lesson
11	Field note book	All phases	Always

All data was gathered in a systematic way, in order to be used as effectively as possible in the analysis. The ethical codes were guiding the data collection throughout the research.

5.2.6.3. Role of researcher

The researcher's participation in the case studies took the form of co-teacher. In order to avoid any unnatural behaviour during the in-classroom lesson case studies, the researcher visited the participating schools and students prior the beginning of the actual research. In some cases, she observed regular music lessons of the students. This led to the familiarity of the students and teachers with the researcher and facilitated the conduct of the research in a non-intrusive manner, which prevented the change of "flow of daily events" (Marshall and Rossman, 1995:109).

The use of video recording was definitely used with the consent of the teachers, parents and students taking part in the research. One of the case studies did not use any recording devices in agreement with the teacher's wishes, while in another case study, a student did not take part in the research following his/hers parents' request.

The interviews were conducted at the end of each lesson. Because of their evaluative nature, it was necessary for the interviews to be carried out as soon as after the end of the lesson, in order for the teacher/participant to have a good recollection of what happened. As a result, the research had to overcome difficulties, such as lack of time from the side of the teachers and loud noises as interviews took place during school breaks.

5.2.6.4. Recording data

The researcher used a *digital recorder* for interviews, *video camera* for video recording of each lesson, *camera* for capturing still images during the creative tasks of the lessons, *observation record sheets* for each lesson and *research diary* for evaluative notes after each lesson.

5.2.6.5. Analysis of Data

Analysis of data according to qualitative methodology in particular "involves organizing, accounting for and explaining the data" (Cohen et al 2007:461). The analysis of the data follows the grounded theory, in which the "theories emerge from, rather than exist before the data" (Cohen et al 2007:491). This theory follows systematic methods for the analysis of data; theoretical sampling, coding constant comparison, identification of a core variable and saturation (ibid). With respect to the analysis of data, the researcher discovers what is relevant for the formation of the theory. The theory "is rooted in the data", so the researcher discovers it after following the above procedures (ibid).

Theoretical sampling is the collection of data on a continuous basis until there are enough to benefit the analysis. This can also suggest that the sample size is not predetermined, until the data are sufficient (ibid: 492; Straus and Corbin, 1998).

Coding is the process during which the data is generated in order to be analysed. There are three types of coding, which review and label the data accordingly; these are: *open*, *axial* and *selective coding* (Newby, 2010; Straus and Corbin, 1998). Consequently, “the application of open, axial and selective coding adopts the method of *constant comparison*” (Cohen et al 2007:493). Through the coding and constant comparison the data reaches *theoretical saturation*, which is the point where nothing new emerges from further data collection (ibid: 494).

The outcomes of grounded theory through the pre-described process are: the *initial codes*, which are the first labels given for the separation of phenomena, *categories*, which are grouped codes, *concepts*, which describe aspects or attributes of categories and finally the generation of *theory*.

The following section identifies the ethical concerns of the research in relation to access, informed consent, privacy and anonymity of the participants and gathering of visual data.

5.3. Access and ethics

It is important to identify the ethical concerns, mainly considering the participants' rights. Ethical considerations are considered in relations to the methods used in the research. Informed consent, negotiating access, privacy and anonymity are some of the ethical issues in relation to research that need to be considered.

The researcher must protect the participants' rights and dignity, avoid any harm to the participants during their involvement in the research and needs to “operate with honesty and integrity” (Denscombe, 2007:141; Hopkins, 2008). In order to protect the participants, negotiating access was at the top of the researcher's ethics agenda. In this research, concerning under-age students and accessing schools, a series of steps was devised for negotiating access. In Cyprus negotiating access for state schools is a matter of gaining the permission of the MoEC. A research proposal form must be completed online and sent to the Centre of Educational Research and Evaluation, formed by the PI to be considered and then forwarded to the authorities at each level of education (primary and secondary) of the MoEC of Cyprus. Access to both primary and secondary schools was essential for this

research, therefore the researcher had to acquire approval from both the Inspector of Primary Education (Appendix F) and the Inspector of the Secondary Music Education (Appendix G). Once access was granted by the MoEC, it was up to the principals of each school to allow access to their schools. The appropriate letters and a layout of the research were provided to all six head teachers, and access was provided in written form and signed by both the head teacher and researcher.

Moving forward, the appropriate informed consent of all participants was necessary, not only from teachers but also from students as well. The “Form of Consent” (Appendix H) complies with the requirements of the below:

- British Education Research Association BERA (2004) Revised Ethical Guidelines for Educational Research
- Hopkins’s guide to ethics for classroom research (2008:201-204).

The researcher followed the codes of ethics on:

- confirming anonymity,
- providing participants with full details of the objectives of the research,
- voluntary participation with informed consent,
- written description of involvement,
- freedom to withdraw,
- signed acknowledgement and understanding by participants,
- data storage, according to the provisions of the Data Protection Act 1998.

In particular, the use of video recording during the case studies was particularly mentioned to the participants, and their parents. For this reason, ‘Parental Forms of Consent’ were sent to the parents of all students taking place in the research, outlining the above and addressing the issue of video-recording (see p.132).

It was also crucial for the teachers to understand that with their informed consent the research project would involve additional work for them, but not beyond their teaching hours. Before the initiation of each case study, the researcher and teacher discussed about the lesson periods that each teacher was willing to provide for the research. This insured that the teacher was willing to participate in this research and spend the time required for its realisation.

5.3.1. Ethical Procedures

There follows a summary of the procedures followed by the researcher in keeping the research in compliance with the codes of ethics.

1. Creation of an outline of the research and methodologies to be provided to the MoEC in Cyprus.
2. Written permission of access to state schools by the MoEC from the administration of both Primary and Secondary Education.
3. Creation of multiple copies of the ethical consent form.
4. Signed written permission from all six head teachers of each school.
5. Signed written permission from all six teachers of each school.
6. Signed written permission from both the students and parents participating in the research.
7. Verbal consent and permission granted by the teachers for observation in the classroom, keeping of field notes and recording of the interviews.
8. Written permission from five of the teachers to use video recording in the classroom (one did not allow video-recording during the case-study).
9. Permission from principals, teachers and students for the use of camera for photographing the teaching procedure.

All data are kept secure, ensuring anonymity and are not to be kept longer than needed, pursuant to the provisions of the Data Protection Act 1998.

5.4. Data collection

This section describes in detail the data collection methods used in this research project. It outlines the issues related to each data collection method as well as their advantages. This section also identifies where these methods were used in the research.

5.4.1. Questionnaires

The use of questionnaires is considered as the most popular method of data collection (Newby, 2010:297). This research used questionnaires for the collection of both quantitative and qualitative (i.e. open text box) data, to create baseline information for the school and the teachers taking part in the case studies as well as to evaluate the students' experience.

Five questionnaires were created for this research; three were used prior to the start of the case studies and two at the end of the case studies. The first questionnaire was conducted in order to gather information about the school's profile, classroom facilities, student population, type of school, number of music teachers and budgeted for the music lesson (Appendix I). The second questionnaire was also used to provide information about the profile of the teacher taking part in the research; general information (gender, age group, name, primary/secondary teacher), general education information, years of service and professional development (Appendix J). Both questionnaires used open and closed-ended questions that are appropriate to obtain information about factual knowledge (ibid: 301). The third questionnaire was a mixture of quantitative and qualitative data, provided from the open and closed-ended questions, but it provided more in-depth information regarding the teachers' knowledge on their teaching, the use of ICT and their knowledge on SbM (Appendix K).

This questionnaire is considered to be the most valuable data tool for data collection used in this research as it informs the development of cases studies and their use of ICT and other learning materials. This particular questionnaire had more open questions, which allowed teachers to express themselves freely using their own words, as the answers were recorded in an open box. Moreover, these answers can be used later in the analysis of the research as quotes, according to the rules on anonymity. All three questionnaires required up to 15 minutes to be completed.

The three questionnaires collected the following information:

- Background information on both schools and teachers
- Teachers' professional development
- Pedagogy in relation to the use of technology in the music classroom
- Knowledge of SbM

The fourth questionnaire was given to the students of secondary schools and their teachers at the end of each case study. This questionnaire was evaluative in style gathering both quantitative and qualitative data. This particular questionnaire was amended depending on the level of the classroom and the lesson plans that the students were taught. At the end, the fourth questionnaire had three versions, one for each secondary case study. The questionnaires used the Likert scale to provide a range of choices to the students following the feature of "unidimensionality" (Cohen et. al., 2007:326). In this way, the "scale should be measuring only one thing at a time" (ibid). The Likert Scale of responses allowed students to rate their responses on a scale of 1 to 5, with 5 being strongly agree and 1 strongly disagree. For the avoidance of any confusion of students when using the Likert Scale, smiley or sad faces were used in the questionnaire above the scale numbers (Appendix L).

Moreover, the questionnaire used open-ended questions as well, in order to allow the students to express themselves in their own language (argo) and teachers to express any thoughts, which they would help the researcher create a better picture of their thoughts. The open questions were used to extract information about the students' knowledge, and the teachers' experience, thus asking the "why" (Newby, 2010:301).

The fourth questionnaire collected the following information:

- Rating of the different SbM lessons they were taught.
- Rating of the activities they participated in.
- Rating of the activities in relation to further teaching.
- Open-ended question on "Most enjoyable task and the reason of choice".

The fifth questionnaire created for this research was a "Respondent's validation" questionnaire, with view to serving the purposes of reliability of this research project. This questionnaire was given at the end of all the case studies, after the data were coded and analysed. The findings were then taken back to the participating teachers for evaluation

and validation. This also enabled the participants to read and evaluate the findings of the research (see p. 140) (Appendix M).

The following table shows the different questionnaires used in the research and their purpose.

Table 5.9: Data collection method: Questionnaires

DATA COLLECTION: QUESTIONNAIRES		
<u>For whom</u>	<u>Type</u>	<u>Purpose</u>
1. Teacher	Open and closed questions	School's profile
2. Teacher	Open and closed questions	Teacher's profile
3. Teacher	Open and closed questions	Teacher's SbM knowledge background
4. Secondary students and teachers	Open and closed questions, use of Likert scale.	Secondary school students' evaluations of the lessons and their teachers' evaluations of the lessons
5. Teacher	Open and closed questions, use of Likert scale.	Teacher's evaluation and validation of the research findings (Responded validation questionnaire)

5.4.2. Interviews

Questionnaires are “useful in soliciting particular findings” (Opie, 2004:111), but even open-ended questions cannot identify in depth the answer to the “Why”. In order to fill in this gap, this research used interviews, apart from questionnaires, for data gathering. In most cases, questionnaires can provide the researcher with background information regarding the participants, but there is also a need for more detailed responses from them. Interviews can and should encourage respondents to develop their “own ideas, feelings, insights, expectations or attitudes” (ibid) and this should allow “the respondents to say what they think and to do so with greater richness and spontaneity” (Oppenheim, 1992:81). Interviews allowed the participants to express what was important to them and thus provide valuable insights about the process of teaching and learning SbM (Denscombe, 2007).

According to Patton (1980), interviews can be divided in four types: informal conversational interviews, interview guide approaches, standardized open-ended interviews and closed quantitative interviews. This research used two types of interviews, the informal conversational interview, which was unstructured (inspector), and the standardized open-ended interviews, which were semi-structured (teachers).

A first interview was conducted with the secondary music inspector in Cyprus. This enabled the researcher to identify prior the beginning of the research, necessary background information about the music curriculum, the music teaching in schools and the communication issues between the MoEC and the music teachers. The use of unstructured and informal conversational interview with the music inspector of the secondary schools at the very beginning of the research allowed a variety of issues and discussions to generate, and in particular, identified gaps in the structure and development of the music curriculum. The results from this informal interview informed the development of the research, and also shaped some ideas for the project in general and the selection of the case studies. Because of the fact that this first interview was unstructured and informal, the answers of the inspector allowed ideas to emerge as “food for thought” before the start of the research.

The following interviews were conducted with the participating teachers after the implementation of each lesson. These interviews extracted more information in relation to *each sound-based lesson, teacher's thoughts and students' reactions towards the lessons* (Appendix N & O). All interviews were conducted, according to the requirements of the ethics code identified earlier (see p.123) having the, written (teachers) and verbal (inspector), consent of the participants.

This research utilised one-to-one semi-structured open-ended interviews, which allowed the respondents to express and develop their thoughts in their own words (Denscombe, 2007:176). Using standardized open-ended semi-structured interviews allowed the researcher to maintain the control over the questions/themes used, as the same questions were used in all cases, but also allowed flexibility to the respondents when expressing their thoughts. Moreover, the fact that the respondents answered the same questions has contributed to an increase of the comparability of their responses, thus facilitating “the organisation and analysis of data” (Cohen et al 2007:353).

The interviews were recorded in a digital form using a recording device, in order to guarantee accuracy and ease transcription and analysis. The use of recording was made

following the consent of the respondent and the recorder was placed as discretely as possible, in an attempt to reduce the possibility of the respondents being more hesitant or reluctant to answer freely. As far as teachers are concerned, there was no issue about the recording of the interviews, but other issues influenced their responses, which will be subsequently discussed in the next section.

5.4.2.1. *Issues associated with the interviews*

Interviews “suffer” from bias issues. Bias is the tendency to favour one thing over another, usually in a way that can be considered as unfair. This ‘prejudice’ is usually affected by the personal characteristics of the interviewer, such as age, ethnicity and gender, and can influence the way the responders answer the questions (Cohen et al 2007:150); however as it was shown by the literature this is inevitable (Hitchcock and Hughes, 1995; Fielding and Fielding, 1986; Denscombe, 1995).

There are also other issues associated with interviews, such as those of “acquiescence” or “leading questions” or even of “power” (Breakwell, 2000; Morrison, 1993). “Acquiescence” is considered the tendency of the respondents to say “yes” regardless of the question, and this was taken into consideration by the researcher when finalising the wording of the questions. The issue of power was also considered for the inspector interview. The high social status of the inspector in combination with the relatively low social status of the researcher could potentially become a barrier (Ball, 1994). This was also one of the reasons it was kept informal; for the respondent to feel free in answering the questions without being worried about any personal or professional reactions. The informal unstructured interview with the inspector was over an hour long.

In relation to time spent on the interviews, the teacher interviews were semi-structured, allowing the teacher to elaborate as long as they felt it was necessary. Many factors influenced the length of each interview. Some of these factors were in relation to the effectiveness of the lesson, the abilities or restraints of the teachers and the students’ behaviour. Some interviews were relatively short, even shorter than 5 minutes and others were longer, lasting 45 minutes or more.

Another issue related to the timing of the interviews was the fact that it was necessary for the interview to take place right after the lesson implementation. In cases where the teacher had to deal with consecutive lessons, one after the other, the time spent waiting for the break could influence the teachers’ thoughts and memory of the lesson. To deal with

this issue, the lessons were arranged to take place most preferably before an interval (break or off-period) for the teacher to have some time available to answer the questions.

Moreover, there were issues related to the way the interviews were recorded. Cohen et al (2007:367-368) argues that tape recording raises the issue of the transcription of only spoken words without offering any comments on any other non-verbal communication that was taking place during the interview. In order to avoid this, the researcher was taking notes during the interview of any information which was considered crucial (body language, atmosphere or visual clues).

The teacher interviews gathered information relating to each SbM *lesson*, such as:

- Enjoyment
- Interesting parts
- Levels of difficulty
- Understanding
- If applicable in future teaching

And in relation to the *students*, such as:

- Reactions
- Inclusiveness
- Educational benefits
- Technological benefits
- Musical benefits

The information gathered from the interviews and the classroom observations was used for the evaluation of each SbM lesson plan, following the action research strategy. The data was evaluated and the necessary changes were made to the SbM lesson plan. Thus, the revised SbM lesson plans could be used in the next case study, and once again the action research strategy was used until the lessons did not need any further changes.

Table5.10: Data collection method: Interviews

DATA COLLECTION: INTERVIEWS		
<u>For Whom</u>	<u>Type</u>	<u>Purpose</u>
1. Music inspector	Informal conversational interview, unstructured	Background information on the music curriculum and music teaching prior the beginning of the research
2. Participating teachers	Standardized open-ended interviews, semi-structured.	Evaluation after each SbM lesson

5.4.3. Observations:

Classroom observations were also used as a tool for data collection during the research. The observations are considered a very important method of data collection, because they allow the researcher to witness and experience firsthand the lessons. As argued by Cohen et al (2007), an observation allows the researcher to collect “live data” (2007:396). The research observations as opposed to observations in everyday life are “planned and conducted in a systematic way” (Opie, 2004:122) and take place to “produce public knowledge” rather than personal one (ibid). Moreover, during the research there were two types of observations conducted in the participated classrooms: 1) observations of traditional music lessons, which allowed the researcher to collect information on teaching procedures and students’ responses and 2) observations on the implemented SbM lessons, which provided information on teaching procedures and students’ responses as well as educational benefits of the lessons. Having the experience of a traditional lesson observation, the researcher could identify any differences in both teacher’s and students’ reactions towards the lessons, but also helped eliminate the “observer effect” discussed below (Example of the observation sheet can be found in Appendix P).

5.4.3.1. Advantages of observations

The advantages of conducting observations as identified by Opie (ibid) are multiple. The researcher gathered information about the physical environment and human behaviour in the classroom. Moreover, she was able to identify any phenomena that might be familiar to the participants, but strange to the observer. Most importantly, the observations provided valuable background of information to cross-check with the findings, thus facilitating triangulation (see p.138).

5.4.3.2. Disadvantages of observations

In spite of these advantages, there are disadvantages in observational research, such as: 1) the tendency of people to change either consciously or not when are being observed, also known as the “Hawthorne effect”, 2) the bias of the data collected, which are definitely influenced by the researcher’s interpretation and 3) most often observations are time-consuming.

In order to eliminate people’s reaction towards the “observer” (thus the name “*observer effect*”), the researcher visited the school classes taking part in the research prior the actual case studies, in order for the students and the teacher to familiarise themselves with the researcher. There were also some timing issues, which affected the observation time as well as the SbM lessons themselves. The teachers, according to their curriculum schedule, agreed in advance with the researcher the number of lesson periods that were willing to give for the purposes of the case studies. As expected, this affected and also informed the observation time as well as the actual research.

Moreover, the fact that the role of the researcher in the case studies was actually “double”, being both the observer and a co-teacher, affected the observations with respect to structure. The observations were semi-structured, allowing the researcher to have some key issues and ideas in mind during the lesson plans. The observations focused on the completion of the tasks and the identification of skills these tasks offered to the students (presentational, co-operational, communicational and compositional skills). The observations also focused on how the teachers’ approach on learning and teaching of SbM, affected the students’ understanding. In general, the observations focused on behaviour, learning and teaching during the SbM lesson plans.

The researcher constructed semi-structured observation record sheets, with spaces left for comments and an extra blank page for any additional information to be added to the “key” observations. This is a kind of checklist based on observation schedules

(Denscombe, 2007:209). This allowed “thick descriptions” of data, such as “observer’s comments placed into categories” to emerge, and, more importantly the data collected from participant observations are “strong on reality” (Cohen et al 2007:404).

Nonetheless, the researcher also recorded additional information on the observation record sheet in relation to the “physical and contextual setting of the observation, the participants, ... the time of day of the observation, the layout of the setting... and any critical incidents that happened” (ibid:406). In order to keep the naturalness of the observations and to avoid being obtrusive, the researcher was sitting in one of the two corners of the classroom facing the students, in order to record their behaviour and still be next to the teacher in cases he/she wanted help of any kind (Denscombe, 2007:213).

Table 5.11: Data collection method: Observations

DATA COLLECTION: OBSERVATIONS		
<u>For whom</u>	<u>Type</u>	<u>Purpose</u>
1. In classroom (students and teacher)	Semi-structured observations	Collect data on behaviour, teaching and learning SbM

5.4.4. Image based research:

Through the use of observations the researcher was able to collect information in relation to oral and visual data. However, the double role of the researcher as observer and co-teacher, the writing down of the details on observational record sheets can easily turn into a tendency in recording only repeating events. As suggested by Erickson (1992), audio-visual recording is powerful enough to overcome this (1992:209-210). Therefore, during the observations (in the case studies that video recording was allowed) there was a camera device recording the whole lesson. “Audio-visual data collection has the capacity for completeness of analysis and comprehensiveness of material, reducing the dependence on prior interpretation by the researcher” (Cohen et al, 2007:407).

Image based research is using visual images as a form of documents, which are considered methods of data collection. Unlike written documents, visual images are considered as a “data in their own right” (Denscombe, 2007:238). Visual images can be used in order to capture and record events, people, cultures, etc using photography, film or drawings. This is called “*created*” images, as the visual images are not discovered, but recorded by the researcher (ibid). Due to this, the visual images could provide important information during the analysis of the data collected by other methods, which would have been otherwise overlooked.

Although video recording can provide a large amount of data for analysis, there are some issues mostly relating to the participants, which are identified below.

5.4.4.1. Issues related to video recording

Firstly, in order to use the device in the classroom, consent forms were signed by all the participants and their parents. Secondly, the principal of the school, teachers and students were again ensured that the audio-visual tapes were going to be seen and examined only by the researcher and nobody else, for reasons of anonymity and privacy protection. Video recording was used in all cases except one. The teacher of Case study 5, School E, did not allow any video recording to take place in any of the lessons. In this case study, the researcher used audio-recording only to record the whole lesson.

The use of video recording raises issues related to the participants’ reaction towards the camera. Prosser argues (1998:104-105) that this creates an element of reflexivity; the “*procedural reactivity*” and the “*personal reactivity*”. ‘Procedural reactivity’ concerns the researcher’s “visibility”, which triggers unwanted phenomena or “threatening” feelings, such as embarrassment or alteration of the behaviour of the participant. The effect of this element was reduced, as the actual device was placed in a corner of the classroom, not directly in front of the students. This is similar with the *observer effect*, but, as discussed earlier, the verbal and written confirmation to the participants that the data was going to remain private, anonymous and confidential minimised the effect of this phenomenon.

5.4.4.2. Advantages of video recording

During the case studies, the video recording was used in order to facilitate the observation process, but also to be used as an additional method for the triangulation of data. Filming can unmistakably capture the culture of each school, behaviour of the students and behaviour of teachers in the classroom. One of the advantages of visual-based research is the “permanence of data”. In this research, data was not recorded to be publicly available, but to be used as a source of information and “recreation” of each lesson plan, when necessary, for the purposes of the analysis, taking into account any verbal and non-verbal reactions.

The choice to use both video recording as well as still photography in the research was made for the occasions when the researcher felt it was necessary to capture specific moments. Still photography was mainly used to capture the sitting arrangements in each classroom at the beginning of the lesson, but also during creative activities in the classroom. In the secondary schools, still photography was used particularly to capture moments of creativity, collaboration and enjoyment. At the end of some lessons, the enjoyment of the activities was obvious in the faces of both the students and teachers, and pictures were taken with the whole class. It was important to identify these moments during the classroom observation, as they could be used as a reference in the observation sheets for the purposes of the analysis.

Table5.12: Data collection method: Visual data

DATA COLLECTION: VISUAL METHODS		
Case studies	No. of lessons	Visual data collected
School A	1	Video camera recording (group picture)
School B	3	Video camera recording
School C	3	Video camera recording
School D	3	Video camera recording and still photography (and group picture)
School E	4	Was not allowed by the teacher (In spite of the fact that the headmaster gave permission for video camera recording in the classroom)
School F	4	Video camera recording and still photography (group picture)
Total: 6 schools	18 lessons	13 videos and 3 classroom pictures

5.4.5. Tests

One of the most helpful data collection tools of this research were the tests used during the case studies. Tests gather numerical rather than verbal data, but can be used as an assessment method for the SbM lessons. There are three types of tests, the *norm-referenced* test, “which compares students achievements relative to other students’ achievements”, the *criterion-referenced* test, which “requires the student to fulfil a given set of criteria”, and the *domain-referenced* test, which concerns knowledge in a particular domain (Cohen et al 2007:415-416). There are also the commercially-produced tests and the researcher-produced tests.

This research is utilising *researcher-produced* tests and *domain-referenced* tests, which are particularly constructed for the area of SbM. Moreover, tests differ according to what they are testing e.g. *achievement* tests and *aptitude* tests. Achievement tests are “largely summative in nature, measure achieved performance in a given content area” (ibid: 417). Aptitude tests “are intended to predict capability, achievement potential, learning potential and future achievements” (ibid). There can be combinations of these types as they often overlap (Cunningham, 1998). This research used such combination to test the learning of students in relation to the lesson plans, in order to measure achievement and understanding of the lesson plans, but also to predict future achievements.

In particular, *formative testing* was conducted. Formative testing is a continual process of tests which monitors students’ progress regarding a programme, in this case SbM. It can measure achievement of certain sections of the programme, in this case the effectiveness of the lesson plans, and also diagnose strengths and weaknesses (Cohen et al 2007:418-419).

The structure and difficulty of the tests was determined by the age of the participants, and the researcher used several types of tests throughout the research: short answer questions, multiple-choice items, inserting missing words, incomplete sentences and matching pairs of items. The difficulty of the tests was dependent on the age of the participants, but it was ensured that the tests helped the students “catch significant knowledge and learning rather than low-level recall of facts (Gronlund and Linn, 1990; Hanna, 1993; Cunningham, 1998; Aiken, 2003).

In all the case studies, the tests were given at the end of each lesson for evaluating the knowledge of the students on the day’s lesson. In the primary school case studies, the tests were corrected in the classroom with the teacher, giving the opportunity to students to correct their answers. In the secondary school case studies, the tests were gathered at the end of the lesson, taken by the researcher for evaluation and scale following the method of “*summated scores*”. This method creates a “pool of items... and the student’s score is the total score gained by summing the marks for all the items” (Howitt and Crame, 2005:203). After the scale of the tests, during the next lesson, the researcher together with the teacher discussed the tests with the students, providing feedback as well as a quick revision of the previous lesson. All tests were anonymous and unidentifiable, following the ethics code requirements for respecting student dignity. (The tests can be found in the Teacher’s Information Pack at the end of each lesson plan).

5.5. Research Evaluation

There are criteria which are used to evaluate a research's design. Three of the most essential criteria are validity, reliability and objectivity. Each of these has its own set of criteria, which can help researchers evaluate their research.

5.5.1. Validity

Validity, as argued by Wellington (2000), "refers to the degree to which a method, a test or research tool actually measures what it is supposed to measure" (2000:201). "If a piece of research is invalid, then it is worthless" (Cohen et al 2007:133). This argument is critical for the quality of the research, as validity is essential to prove the "goodness" of research (Opie, 2004).

Different types of validity are applicable in relation to the research methods selected and some of the most common ones are: internal validity, content validity, and external validity.

- *Internal validity* "seeks to demonstrate that the explanation of a particular event, issue or set of data which a piece of research provides can actually be sustained by the data" (Cohen et.al 2007:135). This ensures that the interpreted cause of events is the actual cause. This can be most commonly validated with the use of triangulation.
- *External validity* "refers to the degree to which the results can be generalized to the wider population, case or situations (ibid: 136). Generalisation, especially with reference to case studies, is an importance issue for researchers. Schofield (1990) argues that "qualitative research can be generalizable" (1990:209), but the extent of this generalisation must be left to others to decide. He suggests that it is important that the data presented in qualitative research are clear, in-depth and with detailed descriptions. This will allow *comparability* and *translatability* to emerge (ibid). This can be achieved by studying the "typical" and through the use of multi-site studies (ibid; LeCompte and Preissle, 1993:324).

- *Content validity* is used to ensure that the choice of method covers “fairly and comprehensively... the domain or items that it purports to cover” (Cohen et al 2007:137). The use of different methods for the data collection covers the teachers’ ability and knowledge towards SbM, the students’ reactions towards the lessons, the content of the lessons and the educational benefits of the lessons, in combination with a careful sampling of the case studies so that content validity is ensured.
- *Concurrent validity* is part of criterion-related validity and ensures that “the data gathered using one instrument must correlate highly with data gathered from using another instrument” (ibid: 140). Triangulation of data facilitates concurrent validity, and, as argued by Hitchcock and Hughes (1995), it is the most common way to support the validity of your research.

5.5.2. Triangulation

Triangulation is a strategy, through which the researcher utilises two or more methods of data collection. The researcher, adopting the strategy of triangulation, aims to increase the potential of internal validity, which is considered crucial for the validation of case study methodology (Yin, 1994). It is also utilised to facilitate the demonstration of concurrent validity (Campbell and Fiske, 1959). There have been identified many types of triangulation, especially by the work of Denzin (1970), who argues that triangulation can be divided in:

- Time triangulation: (studies taking into account change and process over time/ cross-sectional design)
- Space triangulation: (studies taking place in the same country or sub-culture / cross-cultural technique)
- Combined levels of triangulation: (different levels of analysis)
- Theoretical triangulation: (different theories for utilising one viewpoint)
- Investigator triangulation: (more than one observer)
- Methodological triangulation: (combination of methods for the same object of study)

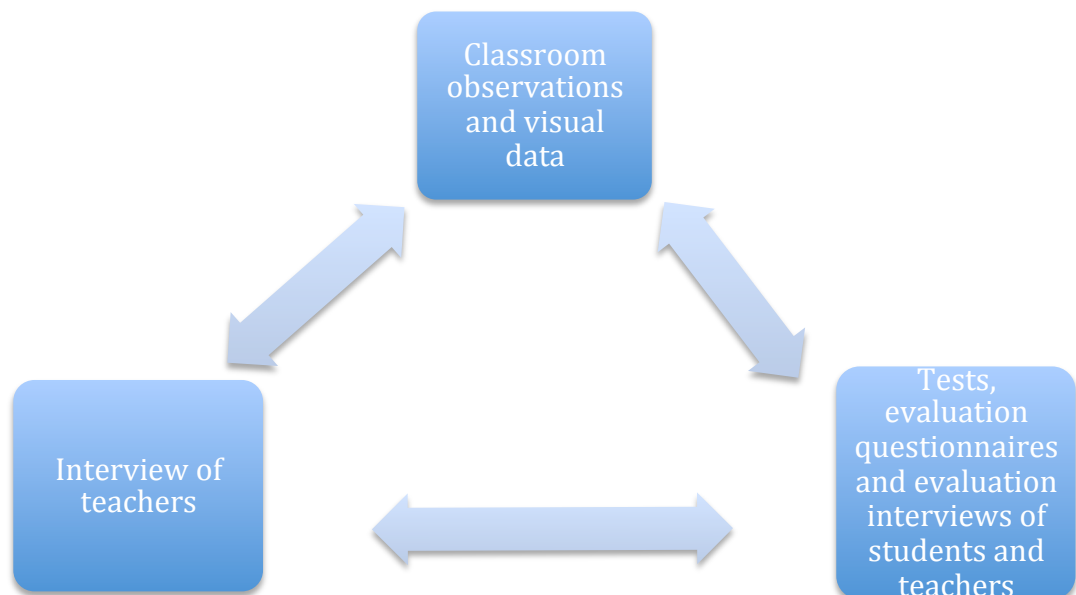
(Denzin, 1970)

During this research, the researcher was guided by methodological triangulation, in which different methods were used on the same object of study. The use of interviews, observations, tests, questionnaires and visual data on the same case study by the researcher ensured methodological triangulation. The data from each instrument were triangulated among them to increase validity.

The strategy of triangulation can provide the researcher with a better picture of the research or even offer the opportunity to check the accuracy of the findings (Denscombe, 2007:137).

The following figure (Figure 5.3.) identifies the methodological triangulation used during the research for getting a more coherent idea around the implementation of the lesson plans.

Figure 5.3: Methodological triangulation of the research



5.5.3. Reliability

Reliability is concerned with the issue of replication; in other words, whether or not the results of the research can be repeated. In qualitative research, reliability has taken different meanings. Lincoln and Guba (1985) prefer to use other terms, such as 'credibility', 'neutrality', 'consistency', 'trustworthiness' and 'transferability'. Others, such as Bodgan and Biklen (1992:48), argue that reliability in qualitative research can be measured in relation to the degree of accuracy and comprehensiveness of coverage. Nonetheless, interpretation can be different even for the same data, if given by different researchers, because reality is multi-layered. There are certain steps for increasing the level of reliability in qualitative research and at the same time decreasing the phenomenon of dependability, as identified by Lincoln and Guba (1985:180-109). These are:

- Respondents validation
- Debriefing of peers
- Triangulation
- Prolonged engagement in the field
- Persistent observations on the field
- Reflexive journals
- Negative case analysis
- Independent audits

The researcher addressed the issue of reliability during the research and utilised the strategy of triangulation (different methods of data collection), respondents validation (return to the researchers for validation of the findings), persistent observation on the field (systematic data collection throughout the case-studies), reflexive journals (researcher diary), negative case analysis (inclusiveness of negative data in the analysis) and independent audits (use of audit trails).

5.5.4. Respondent Validation

As part of addressing reliability, the participating teachers used the "Respondent validation" questionnaires to evaluate the findings. It was necessary to take the findings of the research back to the participant teachers in order to ask them whether they agree or disagree with them, as advised by Lincoln and Guba (1985). The questionnaire was constructed in such a way to enable the participants to validate the findings of the research and simultaneously validate the researcher's interpretations of the collected data (Appendix M).

5.5.5. Data analysis approach

Data analysis involves organisation, codification and categorisation of the collected data. The purpose of the analysis is to test the applicability of the SbM lessons from both the teachers and students' perspective and evaluate their effectiveness. In this research project the method of organizing the data is by identifying the themes presented in each case study (School A- F) and then combining the data from all the data collection tools (questionnaires, observations, interviews, tests and visual data).

5.6. Summary

The aim of this chapter was the identification and detailed description of the methods used during the research. The chapter identified the rational behind the choice of the critical paradigm, which guided the use of action research in a multi-site case study design. Moreover, it outlined the mixed methods approach with detailed description of the methods used for data collection, which facilitated the strategy of triangulation of data. Following this approach, the research used questionnaires, interviews, observations, visual data and tests to collect both qualitative and quantitative data.

Moreover, the sample of the research was explained, which included 6 schools, 6 teachers and 117 students. The method of triangulation as well as the respondent validation questionnaires for the evaluation of the SbM lesson plans and lessons are the chosen approaches on the issues of validity and reliability, which are considered crucial for the writing and the overall evaluation of research.

The following chapter presents the findings collected during each phase, following the codification of data, as guided by the grounded theory approach; open, axial and selective coding.

Chapter 6: Findings and Analysis

6.1. Introduction

During the case studies, data were collected using questionnaires, interviews, observations, tests and visual images, in order to identify themes in relation to the implementation of SbM lessons in the music classroom. These data were collected in a systematic way following the grounded theory paradigm, and then separated in emerging themes. The findings were collected during four phases.

During **phase 1** data were collected to identify the background of the participated teachers and the profiles of the schools. Also during Phase 1, the unstructured interview with the music inspector took place.

Phase 2 marked the beginning of the case studies, during which the SbM lessons were being implemented in the participated music classrooms.

Phase 3 marked the end of the implementation of the lesson plans and the start of the evaluation of these lessons from both students and teachers.

Phase 4, being the last phase of the research, collected information on the validation of the data through a respondent validation questionnaire, which was given to the participating teachers.

Below, each phase is presenting the findings and themes that emerged in each, relating to the issues and themes identified in the literature review in Chapters 2, 3 and 4.

6.2. Phase 1: Teachers' background questionnaires and music inspector's unstructured interview.

In the first phase of the research, an unstructured interview took place with the music inspector of the secondary schools. Background and profile questionnaires were also given to the participating teachers. The primary aim of this phase was to identify the current curriculum content of the state schools of Cyprus and identify any issues that could influence the creation and implementation of the SbM lesson plans. Phase 1 marks the period before the creation of the SbM lesson plans.

6.2.1. Inspector's unstructured interview

Before the actual start of the fieldwork research, the researcher arranged for an interview with the music inspector of the secondary schools. The interview was arranged through the inspector's office in the MoEC to take place there. The meeting's primary aim was to reveal the details of the project to the inspector and in return to extract information in relation to the music curriculum being taught, the training provided by the MoEC and the equipment available in the music classrooms of the state schools of Cyprus. It was basically an opportunity for the inspector to form a clear idea of the research project and get as much clarification as needed.

During the interview the inspector was very positive in relation to the research. The inspector herself had a good knowledge around SbM and electroacoustic music, and she had a positive attitude towards teaching electroacoustic music in the classroom. However, during the interview certain issues began emerging in relation to teachers, the schools and the MoEC. The following table outlines the themes that emerged through the interview with the music inspector.

Table 6.1: Themes emerged after the interview of the music inspector

After the interview with the music inspector themes emerged in relation to the:

- Equipment of ICT in the music classroom
- Communication between the MoEC and the schools
- Training provided to the music teachers
- Music projects in schools
- Curriculum knowledge of teachers and background

Equipment of ICT in the music classroom

The researcher, after discussing the project with the music inspector, asked about the equipment provided to the secondary schools' music classrooms. The inspector answered that currently all music classrooms are equipped with a fully working computer, which is updated with music software. Although the inspector supported that "All secondary

schools are equipped with ICT” (Music Inspector, MoEC, September), one of the secondary schools that was taking part in the research did not have a computer in the classroom. When the researcher contradicted the inspector, there was not a clear answer why that particular school was not equipped with ICT in the music classroom. Moreover, the music software installed on the computers was only notational software, either Sibelius or Finale. Under such circumstances, the music teacher had no opportunity to teach in depth any SbM using ICT as there was no equipment or appropriate software available.

Identified issue: No appropriate equipment or software available in schools to support the learning of SbM with ICT.

Communication between the MoEC and the schools

Another issue considered as significant in relation to the research was the lack of communication between the MoEC and the schools. The inspector believed that all secondary schools were equipped with ICT. However, as proven, some schools were not equipped yet. During a discussion with the teacher participated in Case study 4 (school D), she said that she had been asking for a computer in the music classroom for the past two years without any results (EP, school D). This shows lack of communication between the MoEC and the teachers.

Identified issue: Communication gap between the MoEC and the teachers.

Training provided to the music teachers

The inspector explained that the PI of Cyprus offers training for the music teachers, including that of ICT in education. However, because these trainings are not compulsory, teachers do not usually attend. The inspector also explained that training provided specifically for the music curriculum is usually on the pedagogy of classical music. With the reformation of the curriculum, the PI offers new training in relation to the thematic units of the curriculum including teaching with technology. In spite of this, none of the trainings includes training on teaching of contemporary styles such as SbM.

Identified issue: Knowledge gap and lack of training on SbM.

Music projects

The MoEC promotes projects on contemporary music. An example is the project “Between the Notes” in 2003, which was a huge project with innovative music composed by the students themselves. However, the specific project as well as other projects promoted by the MoEC are not for all the students, but rather for a few classrooms/students specifically selected to participate.

During the academic year 2010-2011, when this research was conducted, the MoEC was promoting a music project entitled “Up in the air”. For the specific project, only a few schools were chosen, out of which 2 or 3 classrooms could participate. The chosen classrooms with their music teachers received training on how to use the music software “Audacity” and what the project was about. Although this is a big step towards the use of music technology in the music lesson, the fact that only a few schools and students received the training and had the opportunity to participate in the project reveals that teachers and students receive different training. This shows that knowledge is not uniform in all schools and the educational change that the MoEC is trying to support through the ERP is not holistic.

Identified issues:

There is a knowledge gap between students in different schools and knowledge gap between teachers’ training.

The educational change is not holistic.

Curriculum knowledge and teachers’ background

The inspector identified that the aim of the music curriculum up to the first cycle of the secondary school is for students to familiarise themselves with all the music genres. In relation to what teachers actually teach in the music classroom, the inspector stated that: “Yes, they follow a unified curriculum but focus on their areas of expertise” (Inspector, MoEC, September). This leads to lack of consistency among schools, because each teacher has a different area of expertise, depending on their university studies. This affects the use of technologies in the classroom but more interestingly the teaching of contemporary music. Thus, there is a confused “curriculum knowledge” among the teachers and lack of an appropriate knowledge basis for all teachers.

More specifically about curriculum themes, such as electroacoustic music, the inspector confirmed that electroacoustic music was implemented in the music curriculum 15 years ago. However, the inspector cannot control what is actually being taught in schools. She reported: “I can’t force teachers to read Emerson [Simon Emerson] in order to teach electroacoustic music” (Inspector, MoEC, September). This comment particularly suggested that the curriculum knowledge of the music teachers is incomplete and training is not enough to ensure that all music genres are being taught up to the first cycle of the secondary school. This affects the effectiveness of the general music curriculum. As a consequence, the teaching of the music curriculum is not consistent in all schools, and students receive different education according to their teacher’s area of expertise.

Identified issue: Knowledge gaps of teachers and gaps in curriculum knowledge.

Summary of the themes emerged after the inspector’s interview

This first contact with the music inspector identified significant areas that needed a more in-depth research and evaluation before the creation of the SbM lesson plans. Moreover, after the collection of these first data a more guided literature review took place in relation to the themes that emerged. Table 6.2 outlines the areas that need further research.

Table 6.2: Areas for research

These areas are:

- Lack of appropriate equipment of ICT in schools.
- Different training of teachers, which leads to knowledge gaps for both teachers and students.
- Gaps in curriculum knowledge of teachers.

During the next level of Phase 1, the researcher after purposeful sampling (see p.108) contacted six teachers/music teachers that could participate in the research. All six teachers completed three questionnaires that identified their profile, teaching and university background and SbM knowledge. Specific questions on equipment, training and curriculum knowledge were included. The main aim of these questionnaires was to identify what might be the issues that affect the teaching of SbM in the music classrooms.

6.2.2. Questionnaires

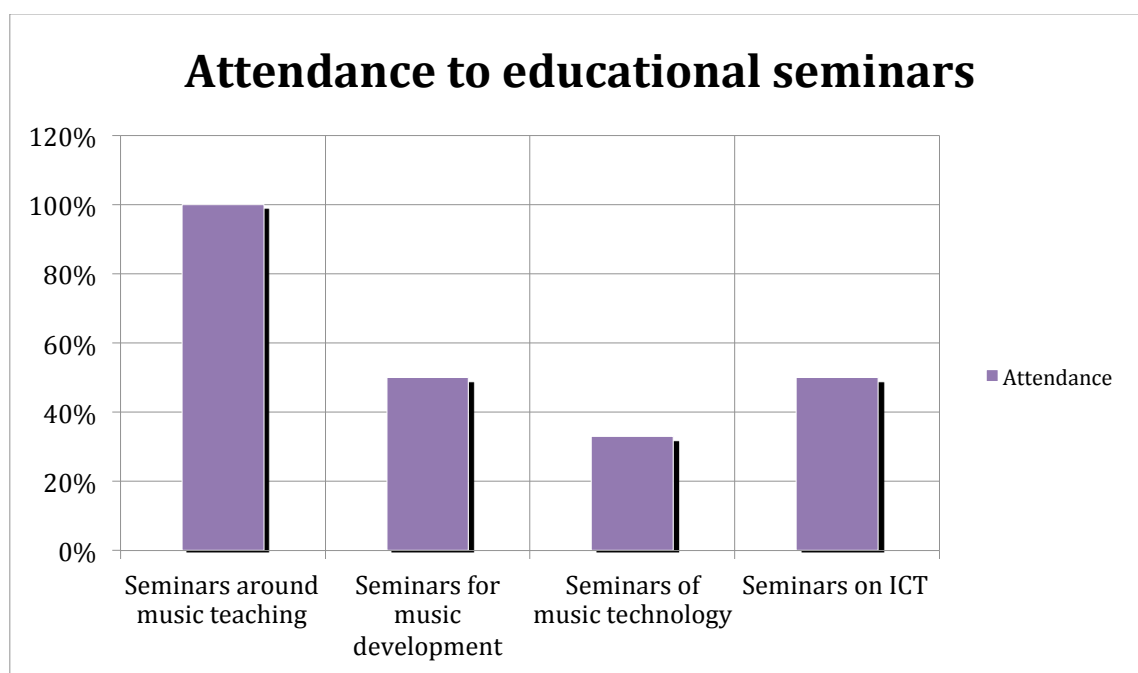
6.2.2.1. Questionnaire 1: teachers' profile

The teachers' profile questionnaires revealed information relating to their gender, age, experience in teaching, university background and professional development. The 83% of the participants were female. All chosen teachers taught pupils in the age range of 9-14 years old with the sample evenly divided (50%-50%) between primary and secondary schools. The teachers were in the middle of the age range (20-63 years old), with 66% age 30-40 years and the remaining 34% age between 40-50 years old. Their experience of teaching can be considered as high, with 83% of the participants teaching more than 15 years in public schools, and the remaining 17% teaching less than 10 years. Only 66% of the teachers participating had a music degree.

In relation to their CPD, teachers stayed up-to-date with the music lessons' knowledge through a range of resources. 83% of the teachers attended seminars provided by the MoEC. Also 83% was self taught, 50% asked the help of professionals, 33% asked the help of their colleagues, and 16% asked the help of students, relatives and/or friends. All reported that they were able to stay up to date with any music developments through the Internet and training courses, while 50% added that articles were a helpful source as well. This could be a positive sign, as there are many online sources that can help teachers implement SbM in their music classrooms (see p. 68).

Moreover, teachers' choice of educational seminars had a response rate of 100% for seminars on music teaching, 50% for seminars on musical development, 33% on music technology seminars and 50% on ICT seminars. In spite of the fact that 50% of the teachers attended seminars on ICT, it was revealed that this was not a "confirmation" of teaching with ICT in their music classrooms.

Figure 6.1: Attendance of the participating teachers to educational seminars



6.2.2.2. Questionnaire 2: school's profile

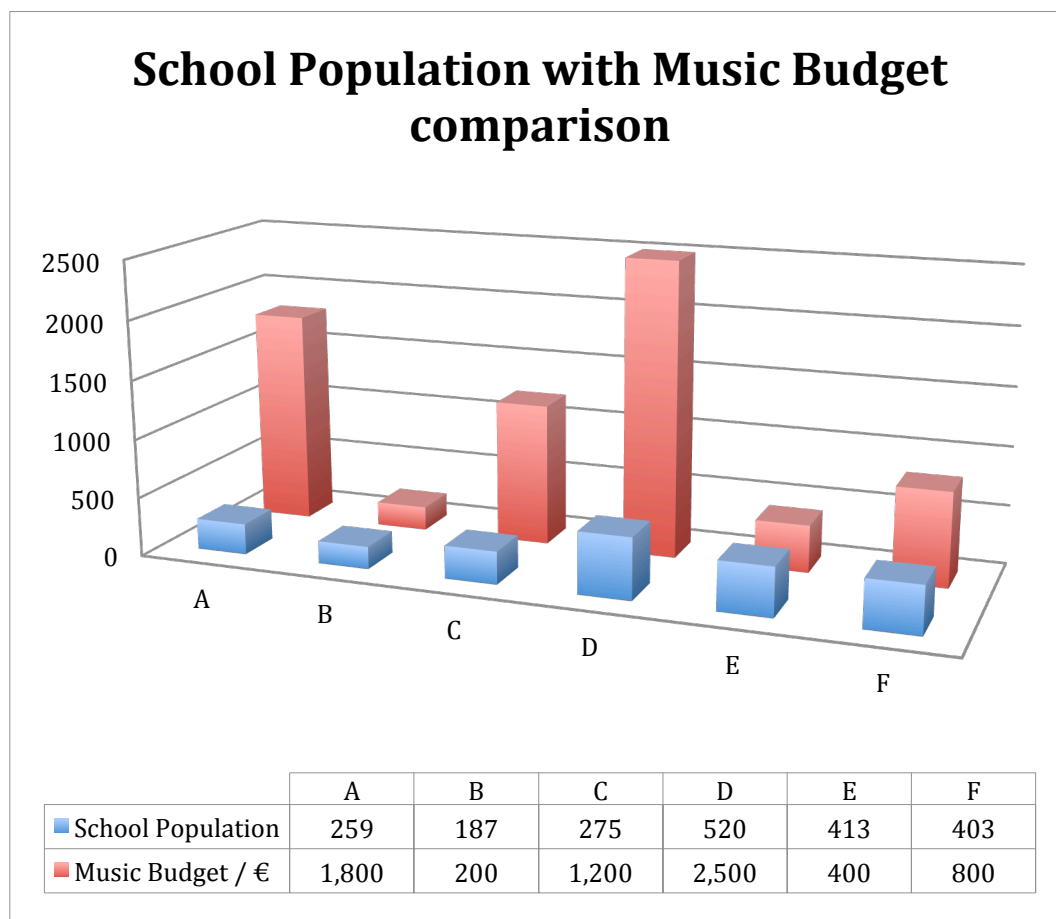
The schools' profile questionnaires revealed information about the school's population, the type of schools participating, the available classrooms for music teaching, performing, storage and equipment, the sample of the participating classrooms and the funding received for the music lesson in each school.

In relation to the population of the schools, 50% of the participants were teaching in schools with more than 400 students, 33% were teaching in schools with less than 300 students and the remaining 16% were teaching in a school with less than 200 students. All participating schools were public, offering free education for the students, but there was a 50-50% division of urban and rural schools participating in the case studies. All schools had music classrooms, with a space for performing music and music storage. The students' sample size in each classroom (minimum 7 - maximum 25 students) was spread evenly: 50% more than 20 students, 33% more than 15 students and 16% more than 10 students.

The annual budget for the music lesson varied ranging from €200 to €2500 with only 16% over €2000 and 33% over €1000 a year but it was not according to the population of the school. Interestingly, the funding in all cases was used for the purchase of instruments,

not for computers or music software, as these were supposed to be supplied by the MoEC (see p.41).

Figure 6.2: School population in relation to the Music budget for the music classroom



It can be identified by the graph that the music budget available to the schools is not consistent to the school population. Most of the music budget on each school comes from the school's council and the school's community and Parent-Teacher Associations.

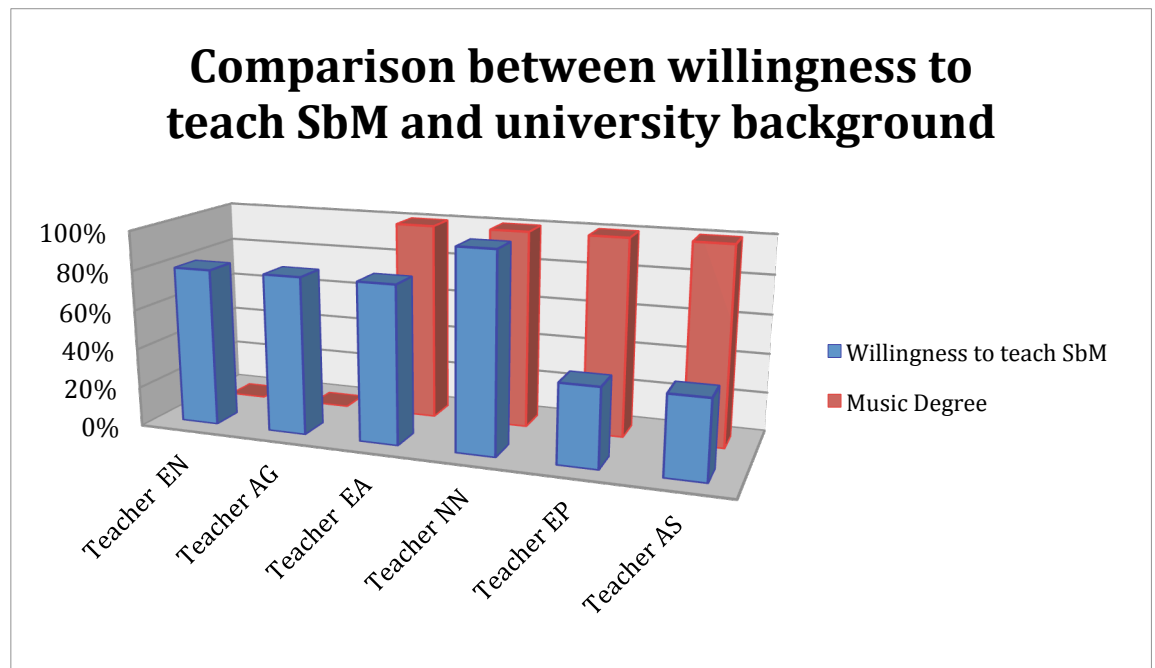
6.2.2.3. Questionnaire 3: teachers' background knowledge of ICT and SbM

The third questionnaire revealed information on equipment, the use of ICT in the music classroom, teachers' knowledge of SbM as well as their willingness to teach SbM in the music classrooms.

As identified in the previous questionnaires, only 66% of the participating teachers had a music degree. However, all of them had from very limited knowledge to no knowledge at all about SbM, most of which only theoretical. The response rate of

willingness to teach SbM was leaning towards 66% positive and 33% towards negative. It was recognised that the willingness of teachers to teach SbM in the music classroom was irrelevant to the fact that some of them did not have a music degree, as two of the teachers with a music degree gave a “negative” response.

Figure 6.3: Comparison between willingness to teach SbM and university background.



As shown earlier, all schools had music classrooms, but only 50% of these were equipped with computers. This 50% had only 1 computer for an average of 20 students. Moreover, only 33% of the participating teachers used any music software for teaching in the music classroom, which in all cases the software was notational (Sibelius or Finale).

Discussion of findings in Phase 1

Findings from the three profile and background questionnaires completed by the teachers of the six case studies revealed that *none* of the teachers had ever tried to teach SbM in the past. The profiles of the teachers and the equipment of their schools affected the lack of teaching of SbM in the classrooms. However, in relation to teaching SbM in the future, teachers identified that **teaching SbM could benefit themselves and their students**, but also raised issues in relation to **factors identified by the teachers as**

limiting in teaching SbM in the music classroom. Table 6.4 outlines the advantages of teaching SbM in the music classroom as identified by the teachers.

Table 6.3: Advantages of teaching SbM identified by the teachers

Comments relate to the lessons being:
<ul style="list-style-type: none">• Beneficial for the students• Enrichment to their own knowledge• Being creative beyond notes• Use of technologies in the music classroom

Beneficial for the students

The teachers, who were willing to teach SbM in their music classrooms, believed that these lessons would be beneficial for the students, and that students would respond positively to these lessons: “I believe that the response from the students will be very positive, as well as the benefits” (Teacher EA, School F, December). These lessons could enrich the students’ musical knowledge and attract their interest, as it is closer to their musical tastes.

Identified benefits:

These lessons could be beneficial for students.

SbM lessons could provide a link between music in and out of the school.

Enrich teachers’ own knowledge

It was pointed out that these lessons, being new and innovative, could improve not only the students’ knowledge around this music, but teachers’ as well.

Identified benefits: Lifelong learning of teachers.

Creativity beyond notes

A teacher, without having any knowledge of SbM, just by reading the definition of this term, commented: “These lessons can be creative beyond notes” (Teacher AG, School A: September). This was one of the most interesting outcomes of the questionnaires, as this teacher pointed out one of the aims of the lesson plans, and she was one of the teachers without a music degree.

Identified benefit: Creativity beyond notes for the students.

Use of technology in the classroom

Other teachers also identified that with this music they can use ICT in the music classroom, as required by the government’s educational policy: ‘You can use technology too’ (Teacher NN, School E, September).

Identified benefit: Use of ICT in the music classroom.

Although the participating teachers identified that there could be benefits from teaching SbM lessons in the music classrooms for both students and themselves, they identified issues as limiting factors for teaching SbM. The following table 6.3. outlines these factors.

Table 6.4: Limiting factors identified by the teachers

In relation to the factors identified by the teachers *as limiting* in teaching SbM in the music classroom issues emerged around:

- Educational Seminars & Current knowledge of ICT in music education of teachers is limited.
- Continuous Professional Development (CPD) of teachers & Relationship with SbM is not developed
- Lack of confidence in teaching SbM. Preference on the classical / traditional pedagogy of the music lessons.
- Limited familiarity with SbM
- Lack of access of ICT in the music classroom

Educational Seminars & Current knowledge of ICT in music education of teachers is limited

All teachers identified that they attended seminars around music teaching from the MoEC, but not all of them participated seminars around ICT in music education or music technology seminars. Issues emerge around the consistency of curriculum knowledge between the teachers, also identified during the interview with the inspector. Seminars provided by the MoEC are not compulsory, and this creates different levels of training between teachers. Thus students receive different music education depended on their teacher's background and training. The participating teachers did not have the same knowledge or training, thus it affected their skills and ability to teach SbM.

Identified issue: Different training of teachers affects SbM teaching.

Insufficient CPD of the teachers

When the researcher asked the teachers about how they were keeping up-to-date in relation to music developments, the participants identified many sources, especially the Internet. However, when they were asked about their knowledge of SbM, the responses were negative. This suggests that the teachers were not up-to-date in relation to music development. Thus, their CPD was insufficient. Teachers' lack of knowledge on SbM was an issue in itself, as it guided the creation and levels of the SbM lesson plans, in relation to teachers' knowledge and abilities.

Identified issues:

The teachers had insufficient CPD in relation to the developments in music education.

Teachers had limited knowledge around SbM.

Influenced the development of the SbM lesson plans.

Lack of confidence to teach SbM

As identified, teachers were concerned about the required confidence for teaching SbM. This was due to the fact that SbM is considered as contemporary music, outside the genre of classical music and traditional pedagogy currently being taught in schools. One teacher reported that 'I prefer the classical pedagogy of music, probably because I don't

feel that I have an appropriate experience and knowledge for this kind of music' (Teacher AS, School C, September). The lack of experience, training and insufficient CPD influenced the teachers' choice of teaching contemporary music in their classrooms. This is also known as the teachers' concerns in relation to educational change (see p. 55).

Identified issue: Lack of confidence for teaching SbM.

Familiarity with SbM

Another issue regarding teaching SbM was the need for the teachers to familiarise themselves first with SbM and to gain an expertise before trying to teach it in their classrooms. A teacher reported that "It is necessary to familiarise myself first and work with this music and then teach my students about it" (Teacher EP, School D, September). This issue is related to training and lack of confidence.

Identified issue: Need for teachers' familiarity with SbM and further training.

Lack of access to ICT

Last but not least, some teachers pointed out that equipment and limited access to ICT is also a restraint in promoting contemporary music. The teachers have no access to the computers' room and as reported 'it is only for teaching IT' and 'it is always full for IT lessons' (Teacher EA, School F, September). Moreover, not all primary schools have computers' room and most of the primary music classrooms do not have a computer installed in the music classroom at all. This relates to the physical restrains of implementing ICT as part of music teaching as identified in the literature review chapter (see p. 41)

Identified issue: Lack of equipment and access to ICT.

6.2.3. End of Phase 1: Summary of the 3 questionnaires

The aim of the first three questionnaires, as identified in the methodology chapter (see p. 124), was to collect vital background information in relation to both the schools and teachers taking part in the research. More specifically, the questionnaires aimed at identifying not only the available equipment in schools, but also the teachers' professional development in relation to music, their relationship and use of technology in the music classroom, and their knowledge around SbM. This information was extremely important for the *structure and content of the SbM lesson plans*, for which the available equipment in each classroom was taken into account, while the teachers' knowledge of ICT and SbM determined the learning materials used in each case study. The SbM lesson plans were created in Phase 2 of the research.

The findings from the questionnaires revealed a link between the issues identified in the contextual background Chapter 2. The problems of the current state of education in Cyprus, in relation to the organisation of MoEC and its communication with the teachers, their training and the music curriculum, were noticeable in the findings of the questionnaires (see p.10). These issues could be a barrier for promoting innovative learning and teaching in the music classrooms. SbM is considered as innovative material, and there is a need for training and support from the MoEC if it is going to be implemented in the music curriculum.

Moreover, issues regarding teachers' training, CPD and concerns in relation to educational change were also revealed through the questionnaires. These issues particularly emphasised the different curriculum knowledge of the teachers, their different training in relation to ICT and their concerns in teaching contemporary music in their classrooms. In spite of these issues, teachers also identified that SbM lessons could benefit students' musical development as well as their own, supporting the use of ICT in the music classroom and enhancing the creativity of the students.

The questionnaires revealed that considerations of the teachers' needs had to be taken into account in relation to technology, familiarity, training and knowledge of SbM. The SbM lesson plans should support teachers' knowledge of SbM, providing the theory related to each lesson. Also, in the SbM lesson plans, in which ICT was used, the lesson should be appropriate for being taught in a classroom with only one computer. Moreover, the teaching material should be in line with the training and university background of the teachers, in order to eliminate any teachers' concerns. All these factors should be applied to the SbM lesson plans, before being introduced to the teachers. The following table 6.5

outlines the themes identified by the researcher as important factors for the creation of the SbM lesson plans.

Table 6.5: Findings of the questionnaires in relation to technology, training, familiarity and knowledge of teachers about SbM.

- **Technology:** It is important to relate lessons to the available equipment in the classroom and the access to the computers' room.
- **Training:** Gaps in the teachers' professional development in music and in music technology were identified, which will influence the development of the SbM lesson plans
- **Familiarity:** There is a need to boost teachers' confidence in teaching contemporary music.
- **Knowledge:** It is essential to enhance teachers' knowledge of SbM.

6.3. Phase 2: Creation of the lesson plans and action research.

Phase 2 marked the beginning of the case studies. The issues discussed above were taken into account as guidelines for the context and content of the lesson plans as well as the material provided to the teachers. Eight different SbM lesson plans were used throughout the research, as identified in Chapter 4 (see p.97). A pyramid design was used to assign the levels of difficulty and knowledge for each age level of the students. However, the difficulty of teaching each lesson plan is not relevant to the difficulty levels of the pyramid design, which is related to students. The questionnaires revealed the considerations and needs of the teachers, and these were taken into account throughout the creation of all the lesson plans.

The first lesson plans were used in the primary schools as a pilot study, with a view to identify the starting point of knowledge that could be provided to the students. These lessons were based on previous knowledge of the students in relation to music, but did not assume any knowledge in relation to SbM. The lessons followed a learning strategy from the known to the unknown, based on the constructivism theory approach (see p.70).

The first three lesson plans influenced the development of the following five lesson plans. In the secondary schools, combinations of the first three lesson plans were used to

create the first lesson of the secondary case studies, in order for all secondary case studies to have the same level of knowledge around SbM.

Findings of the case studies

After each implementation of a SbM lesson plan, the researcher interviewed the teachers in order to investigate and evaluate the effectiveness of the *lesson*. Moreover, the researcher conducted observations during all lessons, and also used recording equipment (in 5 case studies visual recording and in one case study voice recording) in order to gather more information on the lesson itself, and the reactions of participating teachers and students.

Findings are presented in relation to each case study to facilitate the subsequent comparison and analysis. A combination of the interviews, observations and recorded data, identified the themes presented below. Findings in each case study will reveal the issues identified by both the participating teachers and the researcher after *open coding of the data* (see p.120).

6.3.1. Primary case studies 1, 2 & 3

6.3.1.1. Case Study 1: Primary school A

Case study 1 was the first of the three primary schools case studies. This first case study implemented only one SbM lesson plan, which was used as a pilot lesson plan, aiming at creating a basic level of knowledge in relation to the listening of sounds.

The findings from school A after the implementation of *Lesson plan 1* (Teacher's Information Pack: Lesson 1) were very satisfactory. Because of the fact that this lesson plan 1 was the first pilot study of the lesson plans in general, the positive reactions (and outcomes) from the teacher and students was really encouraging for the rest of the research. Table 6.7 outlines the themes identified in the Case study 1.

Table 6.6: Themes identified in Case study 1, Primary school A

In more detail, the interview, observation and visual data revealed themes around:

- Enjoyment of both teacher and students during the lesson
- Understanding of the SbM lesson material
- Appropriate structure of the learning material of the SbM lesson plans
- Students' reactions towards SbM music lessons
- Educational benefits promoted to the students through the teaching of SbM

Enjoyment of both teacher and students during the lesson

It was one of the aims of the lesson plans to be enjoyable for both the students and the teachers (as identified and supported in Chapter 4, p. 76). As reported by the teacher, the specific lesson was “very pleasant” to her and the students (Teacher AG, School A: 9/11/10). The lesson needs to be interesting, in order for the teachers to feel comfortable teaching it, as they are the first to enjoy it.

Understanding of the SbM material presented in the lesson

Understanding the strategies and definitions used in SbM is the main aim of the lessons. The teacher and the students are required to identify and understand the primary ideas of SbM and develop specific skills. As reported by the teacher, “the most interesting part of the lesson was that following the various activities conclusions were drawn and the students understood the ... purpose of the lesson” (AG, School A: 9/11/10). The fact that students are able to understand the material presented during the SbM lesson is critical for its success. The teacher commented that “I think at the end of it they understood everything” (ibid). If there was something that the teacher thought it was difficult for the students to understand, this would influence the structure and/or content of the first lesson plan. Because of the fact that the first lesson plan was a pilot one, it would influence the development of the following ones. This category is interlinked with the following theme, the “learning material”, as the one influences the other.

Appropriate structure of learning material

It was vital for the researcher to identify whether the structure of the material provided to the teachers was efficient and satisfactory, i.e. the Teacher's Information Pack developed by the researcher. The most appropriate time to ensure this was during the first lesson, which was the pilot lesson. The teacher reported that the material provided was "fine", as she did not have any difficulties in teaching it. As observed by the researcher, the teacher followed exactly the path provided in the lesson plan and completed all the learning outcomes and activities. It was really encouraging that a teacher without music specialisation was able to teach the lesson. This was an issue relating to the different types of teachers teaching music in the music classrooms of Cyprus, due to the fact that there is an imbalance of knowledge bases of teachers (as identified in the research of Holden and Button, 2006, p.36), which could influence the material presented in the lessons.

The positive delivery of this first lesson suggested that the structure and content of the material is appropriate, thus the following lesson plans followed this structure. This suggests that each lesson plan includes the theory of the lesson, separately for the teacher and the student, the activities and the learning outcomes for each lesson.

Students' reactions towards the SbM lesson

The observation by the researcher identified that the students enjoyed the new lesson. Teacher's comments about participation, communication and collaboration between the students suggested that the lesson promoted educational skills to the students. This was of particular importance as it relates to the main aims of the New Music Curriculum (2010) of Cyprus, which suggests that students should "use music to develop a collaborative spirit...and communication" (MoEC, 2010). The teacher also reported that she could identify positive reactions from the students and this was mainly because of the way "the lesson was taught" ... "[I]t was interesting!" (AG, School A: 9/11/10).

Educational benefits promoted to the students through the SbM lessons

The lesson must not only be enjoyable and interesting, but also designed to efficiently promote and enhance students' educational skills. As identified above, the researcher/observer identified some of these educational benefits, while the teacher also reported that

the lessons were stimulating, as the students “had to concentrate to listen to things which they found more ... challenging”(ibid). She also added that this lesson could be proven beneficial for other lessons as well, as it provides the opportunity for the students “to learn to pay attention” not only to what they hear but also what they read. These lessons can help students focus on what they are doing and improve their learning: “they understand or listen better!” (ibid). Again this supports the aims of the New Music Curriculum (2010) in relation to the development of skills and the connection of music to other subjects of the curriculum. The teacher in Case study 1 reported that this lesson could be linked with the Greek subject lessons relating to ecology and sound pollution.

Summary of Case study 1

The pilot of the first lesson plan indicated that the material provided was efficient and appropriate. This was also supported by the fact that the teacher had no musical training, but she managed to teach the SbM lesson without any problems or hesitation. The students enjoyed the lesson and the teacher reported that she would teach it again as part of the music lessons in the future, particularly in combination with other areas of the curriculum, such as the ecology theme of the “Greek” subject lessons. This could expand the use of the SbM lessons for cross-curriculum lessons, for instance combinations of Greek and Music lessons, with reference to ecology.

6.3.1.2. Case study 2: Primary school B

The second case study took place in School B, where there was a general teacher with specialisation in music. This case study was piloting *Lesson plan 2* (Teacher’s Information Pack: Lesson 2) after repeating Lesson plan 1 with minor changes. The variant that changed in relation to the delivery of Lesson plan 1 was the fact that this teacher had a general teacher’s degree with a specialisation in music, as opposed to the previous teacher, who was a general subject teacher only. Each SbM lesson plan should be completed in one teaching period. However, this Case study 2 took three teaching periods rather than two to complete the two SbM lesson plans, as some factors influenced the delivery of the lessons. These factors are presented in detail below along with the other themes identified in the case study.

Table 6.7: Themes identified in Case study 2, Primary school B

In more detail, themes emerged on:

- Enjoyment of both teacher and students during the lesson
- Teacher's concerns relating to the SbM lesson
- Appropriate learning material and ideas of the SbM lesson plans
- Teacher's suggestions for the SbM lesson plan
- Understanding of the SbM lesson material
- Students' reactions towards the SbM lessons

It can be identified that the themes that emerged were similar to those in Case study 1. However, some of the themes emerged in Case study 2 had a negative impact on the delivery of Lesson plan 1, revealing that not all outcomes are predictable.

Enjoyment of both teachers and students during the lessons

As identified in Lesson 1 of Case study 2, the “enjoyment” of a lesson is influenced by many factors. In particular, the teacher participating in Case study 2 “was very stressed out” (Teacher EN, School B: 11/11/10). This stress affected her confidence and the delivery of the lesson on time. The teacher reported that some concepts of Lesson 1 were not clear in her mind, as these were all new to her and she had not done anything similar in the past. This made the lesson more difficult to teach and she did not complete all the teaching material of the Lesson plan 1 during the one period of teaching time. This also affected the students, who felt a bit lost by the lack of guidance by their teacher.

In contrast, during Lesson 2 the teacher felt more confident, without stress, as she had a first experience with SbM in the previous lesson. She was able to teach the unfinished material of Lesson plan 1 and then continued without any problems to Lesson plan 2. This led to a third teaching period, which was required for the completion of Lesson 2, during which both students and teacher enjoyed the activities. The need for preparation and teaching experience of SbM was obvious and, as suggested by Fautley and Savage (2007),

procedural and declarative knowledge by the teacher in relation to the lesson is essential (see p.74).

Teacher's concerns relating to the SbM lessons

It was observed by the researcher during Lesson 1 of Case study 2 that the stress of the teacher was due to the lack of experience in teaching contemporary music. Even if the teacher had a specialisation in music, some ideas and definitions were not clear to her and she felt unprepared for the lesson. Contrastingly, in Lesson 2 her confidence grew and, as she reported, this was due to the fact that she already had some experience with this type of music. This relates to the teacher's concerns as identified by Hord et al. (1998), which are usually presented in educational change, but here they are obvious because of the implementation of new material unfamiliar to the teachers (see p.55).

This particular teacher reported that she had strong ideas about 'inner listening', which she connected with Yoga. For this reason, she preferred to change some of the material provided in the lesson plans, in order to "feel more confident in teaching it" (Teacher EN, School B: 11/11/10). This is something particularly highlighted by Hord et al. (1998) in relation to the feelings, thoughts and reactions of teachers when implementing a new curriculum (see p.55). This could be observed also in other case studies, where teachers were similarly feeling confused and stressed when teaching the implemented material.

Additionally, "time" in Case study 1 seemed to be planned to the minute, but, as identified above in Case study 2, the factors that influenced the delivery of the lesson made time an important element. The teacher reported that she lost track of time, because she was stressed out and this did not allow her to finish Lesson 1 on time. As a result, three teaching periods were required to complete Lesson plans 1 and 2. The teacher reported in Lesson 1 that her own beliefs on "inner listening" used in the Lesson plan 1, which related to Yoga, confused her and she got stuck on the definitions, thus running out of time. Previous research suggests that time is an important factor influencing effective teaching, and it is the role of the teacher to determine the time spent on each activity (see p.76).

Appropriate learning material and ideas of the SbM lessons

When the teacher was asked about the material provided to her in Lesson plan 1, she reported that it was satisfactory, even if she did not manage to deliver the whole Lesson plan 1 in one teaching period. The teacher reported that she believed that the problem affecting her teaching was her lack of experience on contemporary music. Regarding Lesson plan 2, she reported that the material provided was very satisfactory and that the ideas were “even clearer” (Teacher EN, School B: 19/11/10). Case study 2 required three teaching periods, rather than two, to complete Lesson plans 1 and 2, as a result of the teacher’s time management and preparation.

Teacher’s suggestions relating to the SbM lesson plans

The teacher reported in the interview that it would be useful to use ‘visual aids’ in the lessons for the students’ better understanding; something she did in teaching period 3, while completing Lesson plan’s 2 activities. During the third teaching period, she used the whiteboard to draw images that seemed really helpful for the students. This was an interesting addition to the lesson plans, and it was identified that many students could more easily understand the learning material through pictures, supporting Gardner’s (1983) theory of multiple intelligences (see p.78).

In the activity of the soundwalk, she seemed excited and focused, for which she used all the time of second teaching period for this activity. This was very beneficial for the students, as they focused on listening and reached the definition of ‘active listening’ and ‘aural awareness’. This also identified that more time should be spent in future lessons, particularly on soundwalks, as more “wait time” for each activity could really benefit the students and engage them more (Fautley and Savage, 2007)(see p. 76).

Understanding of the SbM lessons

The teacher influenced the students’ understanding of the material. In Lesson plan 1, the teacher struggled in reaching definitions, and the participation of the students was limited. The teacher’s lack of confidence influenced the responses of the students and time was spent on repeating the definitions by the teacher, instead of the completion of the lesson. In Lesson 2, the opposite phenomenon occurred. The teacher, having more

confidence and less stress, delivered the lesson, guided by the Lesson plan 2. She did not follow the order of the activities at all times, but she managed to complete all the tasks, encouraging the students' participation and engaging them in the learning process.

As the teacher reported, she identified a very positive reaction by the students: *"They responded much more, to the point where I had to interrupt them and ... get them back to order"* (Teacher EN, School B: 19/11/10). She added that this could be influenced by the fact that the students had an experience of this music before (Lesson 1). Thus, familiarity of both students and teachers with this music is essential to the successfulness of the SbM lessons, and a potential solution for the issue of accessibility of SbM. This particularly relates to Georgaki's suggestions and concerns relating to the familiarity of this music, in order to attract more people (see p. 52). This suggests that the lesson plans should introduce students to this music, through simple exercises that involve specific aspects of SbM in order to familiarise them with basic elements of this music, ex. Listening techniques.

The most interesting part of this Case study 2 was when the students, without any guidance from the teacher, while analysing the sounds from the soundwalk activities, reached an understanding of SbM: *"Today's music, as they named it, uses these sounds in its compositions"* (ibid). The students stated that professional musicians compose this music and that they have experienced some of its applications through sound design, such as at the cinema. The teacher identified this as the most interesting moment of the lessons, during which the students recognised the use of sounds as part of a music composition.

Students' reactions towards the SbM lessons:

Last but not least, students' reactions were at most times influenced by the teacher. In Lesson 1, there was participation from the students but in Lesson 2 the excitement outreached Lesson 1. The teacher and the researcher noted positive behaviour, and the teacher also reported that *"although they seemed very tired they were surprisingly well-behaved and very participant"* (Teacher EN, School B: 19/11/10). The students participated a lot during the activities, responding to the teacher's questions, and the activities gave the opportunity to almost everyone to say their findings during the sound identification activities ex. Soundwalk.

Summary

Case study 2 was also considered as a pilot study, and it showed that there are external factors that can influence the delivery of lesson plans, such as time and teachers' concerns. In relation to the material, the teacher considered it as satisfactory and the researcher's amendment to the Lesson plans 1 and 2, before the implementation in Case study 3, was the addition of visual aids. The researcher after Case study 2 felt the need to dedicate a whole lesson on the Soundwalk exercises, but the limited time spent in each school did not allow for this to happen.

6.3.1.3. Case study 3: Primary school C

Case study 3 took place in primary School C, where the teacher had a music degree and not a general teacher's degree. The school was relatively new and equipped with ICT in the music classroom. This particular case study was testing *Lesson plan 3* (Teacher's Information Pack: Lesson 3) in which performance of SbM works was integrated. The case study also used Lesson plans 1 and 2 with all the necessary changes after their evaluations in Case studies 1 and 2.

Table 6.8: Themes identified in Case study 3, Primary school C

The themes emerged in this case study are:

- Levels of enjoyment of the SbM lessons
- Similar music lessons used in younger music classes
- Educational skills of the students: critical thinking and problem solving
- Inclusive education
- New learning / Understanding of the SbM material for both the teacher and the students
- Lessons' structure and material
- Students' reactions towards the SbM lessons

Levels of enjoyment of the SbM lessons

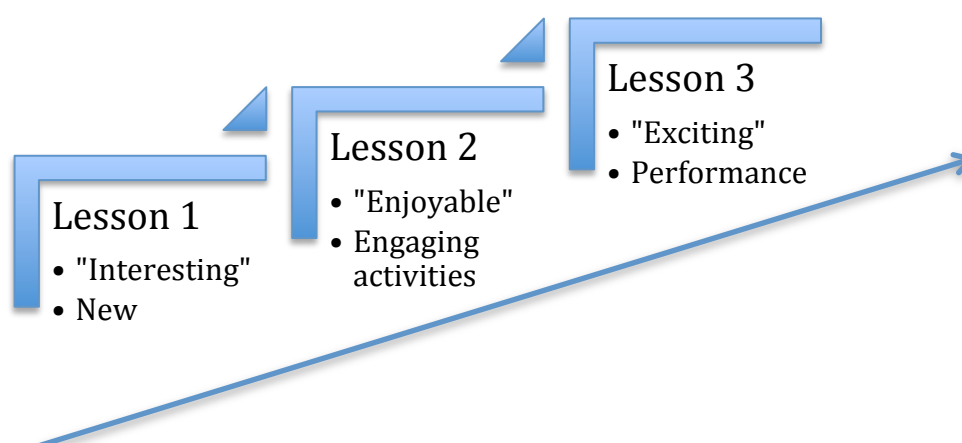
In this case study, when the teacher was asked if she enjoyed the lesson, she used words like “*interesting*” to describe it rather than enjoyable. For instance, her comments about the first two lesson plans were that they are just interesting, without any reference to how she or the students felt about it: “*I may say it (the lesson) was very interesting*” (Teacher AS, School C: 23/11/10).

The teacher’s comments suggested that the first two lessons might have been more appropriate for younger classes. This shows that Lesson plan 1 and 2 were not as engaging as with the younger classes of Case studies 1 and 2. Engaging the students in the learning process is considered very important, as supported by Reid et al. (1989), who positioned engagement at the top of their five-stage model for learning (see p.70). Thus, for older students new lesson plans should be constructed which could attract older students with more difficult activities.

Nonetheless, by Lesson 3 there was a noticeable increase of enjoyment, as the activities were more engaging, interesting and appropriate for the age of the students. The teacher reported that the increase in students’ excitement was because of the activity involving performance. The levels of enjoyment, as suggested by the teacher, were increasing in each lesson; Lesson 1 was interesting, because of the fact that it was new, Lesson 2 was enjoyable because of the engaging activities, such as the Soundwalk, and finally Lesson 3 was exciting, because of the performance of the students.

The following diagram shows the increase level of enjoyment:

Figure 6.4: Increased levels of enjoyment in relation to the lesson’s activities identified by the teacher



Similar music lessons

In Case study 3, a new category emerged; that of similar lessons. The teacher reported similarities between the SbM lesson plans and the other lessons she taught. She was particularly confident in Lesson 1, where she identified that she had previously taught a similar music lesson about sounds, but in younger classes. Thus, her confidence related to the fact that she had previous knowledge of this lesson material and she had control over the change that was happening (Crook, 1994) (see p.33).

She reported that in relation to sounds in general there was a thematic unit in Level 1 of the primary school's music curriculum, in which environmental, instrumental and human sounds were identified. She explained: *"Yes, I have taught something similar before, but in Level 1; not in such a detail though"* (AS, School C: 23/11/10).

Other activities that she had taught before, similar to those in the SbM lesson plans, were the sound-stories. However, for these activities she used instruments and notes rather than sounds. It was interesting that only in Case study 3 the teacher identified similarities of the SbM lessons with other learning material of the music curriculum. This suggests that there is lack of a unified knowledge basis of the teachers, leading to the conclusion that there is not a unified music curriculum in Cyprus. This links back to the findings in Phase 1 after the inspector's interview, during which it was identified that teachers have different curriculum knowledge (see p. 143).

Educational skills: critical thinking and problem solving

During this Case study 3, the teacher noticed the educational skills that these lessons could offer, commenting on the activities of the lessons. More specifically, she reported that the activities being energetic could attract students' attention and offer critical thinking: *"It made them think more, and engage with the listening material"* (AS, School C: 23/11/10). The teacher emphasised the lessons' potentials to give the opportunity to the students to think and find solutions for the tasks. This was particularly important in relation to the level of the activities, which allowed all students to participate.

Inclusive education

As observed by the researcher, the specific class participating in the Case study 3 was a mixed ability classroom, in which one of the students had special educational needs and another student was a foreigner, who could understand only a few words in Greek. This was of particular importance to Case study 3, as the teacher confirmed that all students participated in the activities. This was due to the fact that activities provided a range of levels of complexity. The teacher reported that “... *it’s a lesson that can be attended by all people regardless of their mental ability*” (AS, School C: 25/11/10). Inclusive education was a surprisingly good outcome of the lesson plans. The researcher aimed at supporting inclusiveness in the classroom regardless of mental ability, thus in the following lesson plans there was a need to create activities with a range of difficulty levels.

As supported in the New Music Curriculum (2010), inclusive education is essential for the successfulness of the new curriculum. These SbM lessons proved that Craft’s little c creativity and Boden’s P-creativity are of particular importance in promoting inclusive education through creative activities which can be related to everyday challenges, such as the lessons relating to sound-pollution and active listening (see p.78).

New learning / Understanding of the SbM material from both teacher and the students

In Case study 3 another important theme emerged: new learning and understanding for both students and the teacher. It was reported by the teacher that these lessons enhanced not only the students’ knowledge but her own as well: “...*We became familiar with something very...the primitive part of music, which is sounds of nature above all!*” (Teacher AS, School C: 30/10/11)(teacher’s emphasis).

This is of particular importance, as it identifies the existence of a knowledge gap affecting the teaching of SbM, but supports that these lessons could help in closing this gap. This also relates to the government’s attempts in relation to lifelong learning and enhancing teachers’ CPD as identified in Chapter 2 (see p. 16).

Moreover, this teacher in the background questionnaire reported that she preferred the classical music pedagogy in the music classroom rather than innovative practises, as she had no experience of this music. By the end of the lesson, the teacher reported that she would definitely teach this music again. Thus it was identified that the lack of knowledge

and experience of the teacher with this music influenced her lessons, hence its important that music teachers attend the trainings of the MoEC relating to innovative material.

Lessons' structure and material

Comments on the structure of the lessons and the material used are also highlighted in Case study 3. It was particularly commented by the teacher that the material provided was very satisfactory and inclusive for all students. She commented how the lessons promoted inclusiveness and positive reactions from the students. Even though the first two lessons were considerably easy for the age of the students, she commented that the students were very active during the lesson and interested in it. About the structure she reports that "it (the lesson) was appropriately structured and given with the most appropriate way" (AS, School C: 25/11/10).

It was also commented by the teacher that the material was very satisfactory as it was "appropriate" for her mixed ability students. The lessons, having a range of easy and difficult activities and tasks, could facilitate inclusive education and engage all students in the learning process.

Students' reactions:

As already identified above, in combination with the researcher's own observations in the classroom, it was noticed that there was an increased level of positive reactions throughout the 3 Lesson plans. In general the most creative activities engaged students and promoted an inclusive environment in the classroom.

More importantly, the students took the sound performance exercises seriously and tried to achieve the best performance possible. The researcher identified a very positive atmosphere during the performance of the tasks. All students, without exceptions, participated in the sound-performance, and they all enjoyed and gave a great performance in representing the sounds of the storm (Teacher's Information Pack: Lesson 3). Creativity was a driving force for the successfulness of the lessons.

Summary

In Case study 3 a very important theme emerged, that of inclusiveness. For the continuation of the research this was considered as one of its primary aims: to promote inclusiveness in the classroom. This guided the creation of the following set of lesson plans. Moreover, in this case study, findings by the questionnaires were supported, such as the lessons promoting new learning for both students and the teachers, and knowledge gap between the curriculum knowledge of the students.

It was also reported from the teacher that she would promote these lessons in the future and she concluded that she is “now one of the supporters of SbM lessons” (AS, School C: 25/11/10), in contrast with her report in the background questionnaires before the implementation of the lesson plans, commenting that she “preferred classical music teaching rather than contemporary ones” (Teacher AS, School C: profile questionnaire). This is an extremely positive result of the research, which supports Georgaki’s ideas that through the appropriate formation of the material and familiarity with SbM more people are attracted to SbM (see p. 52).

6.3.2. Secondary School Case studies 4, 5 & 6

After the evaluation of the primary schools case studies, a combination of new lesson plans was created. The researcher used the activities from the first three lessons to create one lesson plan (Teacher’s Information Pack: Lesson 4) to be used as the introductory lesson around SbM for the secondary students. This Lesson plan 4 introduced most of the material of the previous lessons, combined into one lesson plan, in order to generate a basic background knowledge level for the secondary school. After the creation of this introductory lesson plan, four lesson plans were created depending on the features of each case study (discussed below).

The teachers’ interviews were further developed to include questions in relation to inclusiveness, time and educational benefits. Questions were added to identify:

- If there is a change in the reaction of the students that are usually non-participant in the music classroom or have special education needs?
- How much time the teachers are willing to spend on teaching SbM?
- Are there any educational and/or technological benefits of the lesson plans?

Each secondary school case study is presented below in relation to the themes emerged in each one.

6.3.2.1. Case study 4: Secondary school D

Case study 4 took place in School D, a secondary school with a music teacher. This particular school was relatively new, but it was not equipped with any ICT in the music classroom, regardless of the teacher's several requests to the MoEC for getting one. Thus the lessons involved with ICT took place in the Foreign Language Suite, which was equipped with ICT. In total three lesson plans were implemented in Case study 4: Lesson 4, 5 and 6 (Teacher's Information Pack: Lessons 4, 5 & 6).

Case study 4 was piloting Lesson 4, which was a combination of the Lesson plans 1, 2 and 3. There was a need to identify if Lesson plan 4 provided an appropriate background level around SbM, for secondary education. Lesson plan 4 was implemented as the *first lesson plan* in all three secondary school case studies. It aimed to create a common knowledge level for all participating students and teachers of the secondary school case studies.

Lesson plan 5, which is considered as the second lesson implemented in Case study 4, involved sound experimentation and recording, while Lesson plan 6, which is the third implemented lesson of Case study 4, was about sound manipulation using a music software, "Audacity". In Lesson plan 6, the researcher was also a co-teacher in close collaboration with the music teacher, instead of just an observer as in Case studies 1, 2 & 3.

Table 6.9: Themes identified in Case study 4, Secondary school D

After the observations of the research in combination with the teacher's responses in the interviews and the visual data, the following themes emerged during Case study 4:

- Enjoyment of students and teacher during the SbM lessons
- Students' reactions/ behaviour/experience of the SbM lessons
- Creativity during the SbM lessons
- Understanding of the material
- Learning material/ structure of the SbM lesson
- CPD/ Teacher's training relating to the
- Inclusiveness/ participation of students
- Similar lessons/ addition to the music curriculum
- Educational/ technological benefits

Enjoyment of students and teacher during the SbM lessons

As identified by the previous case studies, students and teachers' enjoyment has been a positive factor for the success of the SbM lessons. The teachers' comments about enjoying the lesson were supported by the researcher's observations about the students' excitement during the activities. The visual data support this statement too, as students were smiling and enjoying the lessons while learning. *"More lessons should be implemented...with all this joy that they showed"* (Teacher EP, School D: 20/1/11).

It was particularly emphasised by the teacher that the creativity of the activities promoted this enjoyment during the lessons. When the teacher was asked if she enjoyed the lesson she reported that *"Yes, because it was creative and the children seemed to enjoy it very much"* (Teacher EP, School D: 20/1/11).

This links back to the educational theories presented in Chapter 4, which relate to the creativity of the lessons. The findings showed that the structure as well as the activities included in the lessons could promote creativity. This means that students not only engaged with the activities but also received the highest level of learning as supported by Anderson and Krathwohl (2001) (see p.70).

Students' reactions/ behaviour/experience

During the observations, the positive reactions of the students were particularly noticed. Students showed enjoyment, excitement and understanding towards the lessons and activities without losing their good behaviour in the classroom. More specifically, creative activities, such as the ones dealing with sound manipulation, sound experimentation as well as the soundwalk, offered students a unique in-depth experience in relation to sound. It was also reported by the teacher that these activities attracted their interest and engaged them in the learning process.

Especially regarding Lesson plan 6, the teacher reported that the positive reactions were *"Because is something new, something modern, something that is really close to them, with computers! The new generation is always with those!"* (Teacher EP, School D: 30/1/11).

In relation to the exercises with the manipulation of sounds through the software "Audacity" she added that *"I believe they will start trying it from today!!"* (Teacher EP, School D: 30/1/11). The students were very excited to learn about music software and how to use

effects, which many of them said that they would download the software at home and start using it to create music they like (*Researcher's Observations 30/1/11*).

The ability of these lesson plans to close the gap between the music inside and outside of school is really important and, as supported by Odam and Paterson (2000), new technologies enable students to create music they cannot physically play and this excites them (see p. 42).

Creativity during the SbM lessons

A strong theme emerged during Case study 4, the one of creativity. Being creative in the music classroom is considered highly important. The findings from the data gathering identified that the activities of the lessons were promoting creativity especially during the experimentation and manipulation of sound tasks. These tasks gave students the opportunity to think, decide and create their own sounds, and then think, decide and manipulate them accordingly using the music software.

As reported by the teacher, the most interesting part of the lessons was the creative work of the students; the way they collaborated in the classroom in order to take decisions and create a SbM composition, but also "*the enjoyment of their creations*" (Teacher EP, School D: 30/1/11). The lessons, following the guidelines of Fautely and Savage (2007) on creativity, confirmed that SbM lessons could be implemented in the music classroom with positive results.

It was also observed and addressed by the teacher that all students participated in the activities and everyone had their own part in the SbM compositions. This is further discussed in the section on "inclusiveness". The teacher interestingly reported that these lessons promoted students' creativity and enhanced their individual musical skills as defined by the New Music Curriculum (2010). "*The students were creative, maybe not with musical instruments, but to choose, to decide, to adjust the intensity of sound or delete...in general mixing, is creative because its completely their own business*" (Teacher EP, School D: 28/1/11).

In relation to creativity, the activities further developed the students' "musical" imagination. It was commented by the teacher that students have more imagination than adults and these lessons can help the creation of "beautiful things", such as SbM compositions (Teacher EP, School D: 30/1/11).

Students can use their imagination for creativity as well as for making musical decisions in their pieces. This was further explored in Case study 6. Hobbs (2005) supports that imagination is one of the key elements required for the success of creative projects and imagination was also an internal part of Savage's (2005) research on innovative use of ICT in schools (see p. 76).

Understanding of the material used in the SbM lessons

It was identified that understanding was more easily achieved through practical activities. As reported by the teacher, activities, such as the soundwalk, helped students understand the definitions used in the lesson. *"...In practice they understood it in detail... and with participation from all the students"* (Teacher EP, School D: 18/1/11).

The activities in the secondary case studies were followed by simple tests in order to evaluate the students' understanding of the material. These tests showed that in activities, where practical or creative tasks are involved, students achieved maximum understanding. This is also supported by the teacher's reports about terminology. She identifies that it was more difficult for her to explain a definition without any practical activity, and for students to reach understanding as well. Thus, it was particularly noted that creative tasks significantly helped in the delivery of the lessons. Moreover, the teacher reported that the tasks were clear, short and nicely given, which also eased understanding.

It is also vital for the lessons to promote effective teaching. Effective teaching is when a teacher uses different teaching strategies in order to gain understanding, not just right answers. The researcher and the teacher observed effective teaching strategies employed within the lessons. This was possible by focusing on one theme at a time, while explaining, creating and expressing it in different ways to facilitate learning and understanding from all students. This strategy supports the multiple intelligences theory of Gardner (1983) (see p.78) on effective teaching support.

Learning material and structure of the SbM lesson plans

During this case study, three lesson plans were implemented. In relation to the learning material and structure of Lesson plans 4 and 5, the teacher reported that they were *“very efficient, clear, with targets that could easily be delivered”* (Teacher EP, School D: 18/1/11).

Concerning the Lesson plan 6, the lack of experience of the teacher in relation to the music software “Audacity” affected her ability to teach the lesson on her own. As a consequence, the researcher took the role of the co-teacher. In relation to this Lesson plan 6, the teacher confirmed that with a more detailed structure of the lesson plan as well as more training and support, she will be able to teach it in the future on her own. It was identified that the need for further training influenced the choice of learning material and affected the implementation of ICT in music education (as supported by Holden and Button, 2006) (see p.38). This leads to themes relating to training and CPD.

Teacher training and CPD

As observed in previous case studies as well as in this one, after an initial experience of SbM, teachers respond more positive to lessons relating to SbM (corresponding to Georgaki’s suggestions of familiarity (2005). In relation with Lesson plan 6, lack of training of the teacher with this music software used could not be easily overcome. It was purposefully chosen that the software used in these lessons, “Audacity”, was supported by MoEC with training and was included in the music “New Music Curriculum” (2010). “Audacity”, the music software used in Lesson plan 6, was not a note-based music software, and could promote SbM compositions. Unfortunately, the teacher had no experience in using this software and had not attended any of the training sessions. This is an issue relating to the non-mandatory training provided by the PI (see p.28).

The teacher reported that with additional training and help she would be able to gain more skills in order to give clear instructions to the students. She added that *“I need to spent some time alone with the software and remember things by heart before using it in the classroom”* (Teacher EP, School D: 30/1/11).

Crook (1994) supports that there are three main factors that affect teachers’ perception on the use of ICT in the classroom. In Case study 4 these factors relate to pedagogy; the perception by the teachers that they lack technical skills and knowledge in

order to teach with ICT (see p. 41). The teacher believed that with more experience and training she would be able to boost her confidence and promote these lessons. Training is essential in relation to the implementation of new material in the music classrooms and “will allow enhanced opportunities for the professional development of the class teacher” (Holden and Buttons, 2006: 26).

Inclusiveness/ participation

As identified in the previous case studies, inclusiveness in education is considered a key factor for the creation of the lesson plans for the secondary case studies. The researcher during the SbM lessons observed whether the lessons promoted an inclusive education. As explained by the teacher, the first two lessons offered the possibility to all students to actively participate in the lesson; something satisfying for the teacher and the researcher. More specifically, for the NTM students, the teacher reported that *“they all participated! Each had their own part and that satisfied me even more”* (Teacher EP, School D: 18/1/11).

It was also observed by the researcher that during the creative tasks all the students participated. Fautley and Savage (2007) support that “Creativity is for all”, and it was evidenced through the creative activities that students could participate, learn and engage with the new material. In spite of the fact that the students were a bit shy at the beginning, probably because of the presence of the researcher (“observer effect”), at the end they all participated and contributed to the lesson. *“...I saw hands up from all the students. Everyone, with no exceptions added something to the lesson”* (Teacher EP, School D: 28/1/11/). The inclusiveness promoted through the lessons made the weaker students *“feel good”* about themselves (Teacher EP, School D: 28/1/11) as it was reflected in their compositions and their participation in the lessons.

In Lesson 6, the students with learning difficulties were not actively participating, but the teacher identified that they were trying to focus and understand the lesson. The teacher added that the clear and short instructions used by the researcher when she was co-teaching were really helpful especially for these students. The teacher reported that *“they didn’t make any questions, but I could see in their eyes that they were watching carefully the new material”* (Teacher EP, School D: 30/1/11).

For the rest of students, Lesson 6 was one of the most exciting one and the teacher noted that this lesson attracted their attention and they were “*intensively participating*” (Teacher EP, School D: 30/1/11). However, this contrasts with the research of Gall and Breeze (2001:53) who support that ICT can offer “music for all” students, as in this case study the students with learning disabilities were not participating very actively. It was observed that using ICT in innovative ways might attract their attention, but it does not increase their participation in the lesson.

Similar lessons/ addition to the music curriculum

In Case study 4 the teacher had not taught anything related to SbM in the past. She reported that she used some similar lessons before, but in relation to note-based music. When she was asked whether she believed that SbM should be implemented in the music curriculum, she agreed suggesting that it should definitely be included at least for two lessons in each secondary school level. She stated that it could be included in a chapter about sound and technology, thus supporting the MoEC in its attempt to promote the use of technologies in the music classroom.

Educational/ technological benefits

The researcher during the observations focused on educational and/or technological benefits or skills promoted through the SbM lessons. She observed that these lessons, following this particular design, promoted the collaboration between students. The teacher observed that they increased their communication, presentation and musical skills. She also supported that the lessons promoted educational benefits as well as technological benefits. She described that the use of “Audacity” gave students the opportunity to develop skills on using music software, beyond the notational ones. Additionally, the use of recording devices gave a first-hand experience to the students on recording sounds, as well as recording their own performance for evaluation or manipulation.

Summary

At the end of Case study 4, a combined general first lesson plan was created, which could be used in the next case studies in order to provide a basic knowledge around SbM. More information was gathered on inclusive education, teacher training, understanding and creativity. The issues identified by the background questionnaires relating to teachers' training and confidence were more noticeable in this case study. Therefore, it was recognised that further training is necessary for these lessons to be promoted. As the teacher argued, she would try and teach these lessons in the future after having more guidance and training from the MoEC and achieving familiarity with the software at a personal level. It was important that the teacher agreed that these lessons could be included in the New Music Curriculum (2010), because they support the new aims and targets of the curriculum as well as facilitates their implementation through music technologies.

6.3.2.2. Case study 5: Secondary School E

Case study 5 took place in School E, where there was a music teacher with a music technology background. The particular school was purposefully chosen because of its rather "bad" reputation as a school with low-level students; more than 15% of the classroom was failing the year.

It was important to conduct research on students with different backgrounds, in order to identify how these lessons are being accepted and what are the necessary changes, if any, in similar situations. The sub-cultures of each school as supported by Bernstein (1971), can inform the nature of teaching and learning, thus they need to be considered by the teachers during the preparation of their lessons (see p. 40).

The teacher's music technology background was considered as an advantage, although the structure of the lessons was kept the same as the ones for music teachers without any knowledge of music technology. This was decided in order to allow for comparison between the case studies and investigate the skills of teachers in relation to ICT. Four lesson plans were implemented in this case study (Lesson plans 4, 5, 6 & 7).

Table 6.10: Themes identified in Case study 5, Secondary school E

The themes that emerged after open coding of the interviews, observations and visual data:

- Enjoyment of the teacher and the students during the SbM lesson
- Appropriate lesson material
- Time of activities
- Students' reactions/ behaviour
- Inclusive education
- Educational/ Technological benefits of the students
- Freedom of students in the classroom
- Creativity in the music classroom
- Equipment provided in the music classroom
- Teacher's new ideas/beliefs/ preparation
- Similar lessons/ Curriculum chapters
- Teacher's concerns relating to the SbM lesson plans

Enjoyment of the teacher and the students during the SbM lessons

The first three lesson plans implemented in this case study were very engaging for the students and the teacher reported that they all enjoyed them at a great extent. However, the fourth lesson implemented (Teacher's Information Pack: Lesson 7), which was based on a video projection of an electronic piece, did not have the same reactions from the students. It was observed that it was not engaging enough for all students and some of them did not behave well in the classroom.

As the teacher correctly identified, many factors led to this behaviour, such as the lack of creative tasks in the specific lesson, which was particularly focused on watching, observing and discussing the visual image and the use of sound. Besides, the teacher added that for some students their psychology and mood affect their behaviour in the classroom. He argued that students had to complete worksheets, and this was particularly distracting for the low-level students. Overall, the lack of creative tasks was obviously one of the main reasons that the fourth lesson failed to attract the attention of all students and did not engage them in the learning process.

Appropriate lesson material

The structure and material provided was well-organised, simple and clear, as identified by the teacher. Lesson plan 6 involved sound manipulation and the researcher again had the role of the co-teacher. In spite of the fact that the particular teacher had experience in using music technology, he still asked for the assistance of the researcher to deliver the lesson. At the end of the lesson when he was asked whether he was able to deliver the lesson or whether he needs further training, he smiled saying that he was confident to teach it at any time. This relates to the background of the teacher in music technology, but the fact that he asked for the help of the researcher for the specific lesson confirms that teacher concerns are still noticeable when there are changes in their routine (Hord et al. 1998) (see p.55).

In relation to the material of the fourth lesson, which did not engage all the students, the teacher suggested some activities, which could be more creative. These include the addition of more videos of different kinds of SbM to promote comparison. This suggestion was taken into account for the amendment of the particular lesson plan in the following Case study 6 (Lesson plan 8).

Time of activities

Time was also an issue regarding some activities, in which not all the tasks were completed. This was a result of students' level, behaviour and psychology. The low level students needed more time to develop the appropriate thinking and understand the definitions and tasks before completing the activities. Especially the activities involving sound exploration, manipulation and music composition, the students needed almost twice the time to process the tasks, in comparison with the students of the previous case studies.

It was deemed necessary that 'wait time' and 'space' must be provided in the future, particularly to students with learning difficulties, so that they can experiment and understand as well as take more informed decisions in relation to the tasks (Fautley and Savage, 2007). This links to the research of Savage (2005), who also identified that there was a need for more time for students to make more informed decisions in relation to the choice of sounds they used in their compositions. This should be taken into account by teachers who wish to implement new material into their teaching.

Students' reactions/ behaviour

As identified above, the behaviour of the students in the classroom affected much of the lessons' delivery. It was obvious that during creative tasks, such as the SbM recording, composition and manipulation, the students were more engaged and focused, in comparison with more passive activities, such as watching the video projection. As reported by the teacher, there were some students that tried to influence the behaviour of the whole class, but they were actually completing the tasks and the activities, learning the definitions and understanding the lesson without even noticing it: *"They wanted to recreate the toilet sounds... and with these sounds and so on... but gradually they cooperated with each other and ...they did it!" (Teacher NN, School E: 27/1/11).*

The observations identified that all students were collaborating with each other, especially when they were in groups. During the creation of the sound-stories, all students in groups produced their own sound and contributed to the outcome of the activity. The teacher and the researcher noted many positive reactions during the first three lessons, which led to an understanding of SbM. This is particularly linked to Vygotsky's (1978) notion of the 'zones of proximal development' (see p. 70). During the group activities students had more support by their fellow classmates, which helped them learn quicker and reach to conclusions relating to the lessons.

Inclusiveness in the music classroom:

There is a significant connection between students' reactions and behaviour to the theme of inclusiveness in the music classroom. It was particularly useful to observe how students with usually bad behaviour and low levels of understanding were reacting to the lessons implemented. The teacher reported that *"the specific class...which I consider it as a class with low level students...they have problems of concentration if you noticed..." (Teacher NN, School E: 20/1/11).*

It was a challenge to engage students in the activities and promote inclusive education. This is also supported by Gall and Breeze's (2007) research in relation to sub-cultures, which explained how each educational setting is different and needs particular consideration as a separate unit. The lessons with the creative activities (the first three lesson plans: Lesson plans 4, 5 & 6) were particularly successful. The students were more focused and they all participated and engaged with the lesson each of them at their own

level. However, the fourth lesson (Lesson plan 7) did not manage to attract the attention of all students. In general the material presented to the students promoted inclusive education, but considerations were taken into account for the restructure of the last lesson plan.

Educational/ technological benefits of the SbM lessons

The most important part of the researcher's observations was to identify the educational and/or technological benefits of these lessons for the students. It was discovered that the lessons could promote collaboration between the students, offering opportunities for participation in the lesson, increasing their presentation skills and promoting creativity. The lessons provided students with a new perspective of listening to music and sounds, and promoted critical thinking in choosing the sounds to be used in the compositions and taking decisions in how to manipulate them.

In relation to technological benefits, the software used allowed them to explore a different way of working with sounds. The students also had a first experience of recording their compositions, and they were able to evaluate their work suggesting any necessary changes. Supported by Bloom's taxonomy of learning, this process from knowledge to evaluation is considered to be the highest order of thinking and it was found to be possible through activities of SbM. The outcomes of this case study regarding the educational and technological benefits of the lessons are fully related to the findings of the previous case studies. Significantly these activities allowed enough freedom to the students to express themselves, work alone and in groups, create and present something that was completely their own.

Freedom

The new theme that emerged from Case study 5 was freedom. As reported by the teacher, the freedom, which was given to the students regarding the creative activities of the SbM lessons, enhanced their collaboration and creativity. Freedom in choosing the sound-story, freedom of movement in the soundwalk and freedom of choice of sounds and manipulation of the SbM composition allowed the students to use their imagination and think outside the box. The teacher identified that *"in fact 'freedom' is very important after*

all. When they are free they think more creatively, beyond the 'traditional' music and with the use of their imagination" (Teacher NN, School E: 27/1/11).

Robinson (2001) describes freedom as essential to promote creative learning, especially freedom to experiment and even to fail, as this allows students to try their ideas, evaluate them and take further decisions, and this was particularly emphasised throughout the lessons (see p. 76).

Creativity in the music classroom

Creativity was a recurring theme much commented by the teacher. In relation to the lessons, the teacher commented that it was the creative tasks that engaged the students and promoted their participation in the lesson. During the last lesson, when there were no creative tasks, the students lost their interest. In particular, the teacher suggested a few ideas for the last lesson, in order to make it more creative, such as using a synthesiser to create samples of sounds and then compositions. However, these ideas had to be considered in relation to equipment constraint issues.

Equipment provided in the classroom

The teacher had some ideas for using more equipment in the lessons in order to have more creative tasks, but most of his ideas could not be realised due to lack of the necessary equipment. These are some of the physical restrains that teachers are facing when dealing with technologies. Higgins (2007) identified these restrains, and the research of Gall and Breeze (2007) as well of Innes (1997) support that equipment constraints are evident in the music classrooms (see p. 41) For example, there was a computer in the classroom, but the teacher had ideas to use synthesisers to create samples and manipulate compositions. The teacher reported that some of his ideas could be difficult for other teachers to realize without any proper knowledge of music technology and this could be the reason why the MoEC did not supply schools with such equipment.

The implemented SbM lessons used only the available equipment of the school, including the school's video projector. This showed that the SbM lessons using ICT were appropriate for implementation in this particular music classroom.

Teacher's new ideas/ preparation

The teacher's background was an advantage for the teaching of lessons involving technologies and he could suggest new ideas for using technologies in the classroom, as identified above. He particularly reported that with the appropriate preparation all lessons can be implemented with positive results for the students. He believed that the teacher is responsible for the students' engagement with the lesson and this is why preparation is necessary. However, most importantly he reported that *"the teacher is responsible for knowing how students react during his/hers lesson, in order to be able to respond to them. If necessary the teacher can change the focus or structure of the lesson... in order to be more engaging"* (Teacher NN, School E: 9/2/11).

The teacher's comments relate to Shulman's knowledge bases. These also related to the research of Gall and Breeze (2007), who identified that the importance of teachers' knowledge bases is their effect over students' learning as well as their influence in using ICT in the music classroom. This is also supported by the work of Koehler and Mishra (2006), who introduced the handbook of TPACK, suggesting that teachers' knowledge bases change when implementing ICT, thus teachers need to be prepared (see p. 34).

In relation to the last lesson, the teacher reported that students' behaviour and the teacher's reactions towards them was crucial for the success of the lessons; *"From the time that I saw them like this (not focused), I thought of different things that I would do...For example, if this lesson was in my curriculum and I knew exactly what... and I had the opportunity to organise it like I wanted, I am telling you...I could...because I know the specific class... is not anyone's fault...In another class this could be a great lesson"* (Teacher NN, School E: 9/2/11).

The importance of this case study was that it allowed different school sub-cultures to emerge, which could relate to similar situations in other schools. In this way, if teachers who face the same difficulties were willing to implement this material in their music classroom, they could have an idea of how to implement these lessons according to the needs of their students.

Similar lessons/ Curriculum chapters/ Teacher concerns

The teacher reported that he dealt with similar lessons involving sound and manipulation in the past, but these did not focus on SbM. He identified that the implemented SbM lessons interested the students very much and that he will use them at some point in the future in combination with other thematic units of the curriculum. However, he repeatedly commented on prioritising other subject areas from the music curriculum for teaching. This relates to Charalambous and Philippou (2010) task-concerns, regarding the teachers' obligations to the school (see p.55). Teachers are expected to implement a curriculum by the end of the academic year, which leaves them with little space for innovative material, which is not included in their curriculum. This was obvious in this case study, as the teacher had the knowledge and the skills to work with sound and technology but did not have the time for innovative material.

Finally, he suggested that these lessons could be included in the curriculum in a chapter about "Sound" and in this way he would be able to teach them as part of the curriculum, rather than as an extra material. He concluded that three lessons would be enough in order to have a "*beginning, a middle and an ending*" that would create a flow between sound experimentation, sound manipulation and SbM compositions (Teacher NN, School E: 9/2/2011).

Summary

The findings from Case study 5 pinpointed a number of issues that can influence the implementation of SbM in the music classroom. Firstly, it was identified that the lessons could benefit students educationally, musically and technologically. In spite of these benefits though, teacher's task concerns relating to the delivery of the music curriculum, revealed that this could affect the choice of SbM lessons over other thematic units that are considered as a priority. Thus, the lessons, which are presented in the Teacher's Information Pack, can be used in conjunction or individually, depending on the teachers' available time.

Moreover, the issues about equipment were more obvious in this case study, as the teacher was willing to do more teaching using music technology, but he did not have the appropriate equipment. Thus, the SbM lesson plans focused on using only the equipment available in the schools, in order to ensure that the lessons are realisable.

Furthermore, this case study revealed that the students' level and behaviour in the music classroom can affect the delivery of the SbM lesson. This also relates to time. Students with learning difficulties may need more time to complete the tasks and reach definitions. Hence, some of the SbM lesson plans, depending on the students' level, might take longer than one teaching period to be completed. Regarding students' behaviour, the teachers can change the structure or focus of the lesson plans in order to keep the students well behaved.

Finally, the important issue of 'freedom' emerged during this case study. The researcher recognized that it was necessary to determine whether 'freedom' was one of the factors that influenced students' creativity and imagination and gave emphasis. This is the reason why the researcher in Case study 6 gave particular emphasis to the issue of 'freedom'.

6.3.2.3. Case study 6: Secondary School F

Case study 6 took place in school F, with a music teacher over four teaching periods (Teacher's Information Pack: Lessons 4, 5, 6 & 8). The modifications in the lessons of this case study were associated to the difficulty levels of the worksheets, while a fourth lesson (Teacher's Information Pack: Lesson 8) was created to replace Lesson plan 7. This fourth lesson, followed the suggestion of the teacher in Case study 5, to have more videos so that a comparison is possible between the different types of music that were taught during the SbM lessons. This specific case study, as identified in Chapter 5, is considered as a typical instance case study. All three factors of the case studies, the school, the teacher and the students are considered to be typical instances. This is extremely significant, as this case study can provide more generalizable themes, most likely to be applicable in other "typical instance" situations.

Table 6.11: Themes identified in Case study 6, Secondary school F

The themes that emerged from the findings of this case study are:

- Enjoyment of students and teachers during the SbM lessons
- Musical benefits of students promoted through the SbM lessons
- Students' reactions to the activities
- Appropriate learning material
- Teacher's Training/ Confidence
- Educational/ Technological benefits of the SbM lessons
- Inclusive education
- Freedom of students in the music classroom during the SbM lessons
- Timing of the SbM lessons
- Similar lessons/ addition to the curriculum

Enjoyment of students and teacher during the SbM lessons

As identified in all case studies, the first theme emerging was always about the enjoyment of the lessons by both the students and the teachers. During all the SbM lessons of this case study, the teacher reported that she enjoyed the lessons for many reasons. In Lesson plans 4 and 8 she enjoyed them because they were interesting and the students understood much more about sounds and listening. In Lesson 5 she identified that these lessons provide an insight into students' thinking, which allowed her to understand how they work and in Lesson 6, she reported that she really enjoyed it because she learned new things "*like a student*" (Teacher EA, School F, 13/1/11). During the observations, the researcher identified that the students, especially during the creative tasks, were really excited and concentrated on the activities. It was noted that the teacher's excitement was corresponding to the students' behaviour and the guidance she offered was at all times intended to increase the interest of the students showing them that she was learning new things like them. This particularly supports the aim of the ERP for lifelong learning.

Musical benefits of students promoted through the SbM lessons

The teacher in this case study highlighted the musical benefits of these lessons. She expressed the view that these lessons increased the listening skills of the students and hers, and helped them focus more on hearing and active listening. So, the main aim of the first lesson plans for aural awareness and active listening were accomplished, while the aims of the New Music Curriculum (2010), as outlined in Chapter 2, were also met.

Moreover, she reported that the structure of the activities provided her with guidance to help her understand the thinking process of the students' compositions. She also noted that the activities offered the opportunity to the students to be critical, making their own musical decisions about structure and musical material for their compositions. These supported Bloom's (1956) taxonomy of learning as well as the revised taxonomy of Anderson and Krathwohl (2001) (see p. 70).

Additionally, the focus and concentration of the students on the activities aided their understanding of the definitions and especially the distinction between electronic music and musique concrète.

Students' reactions towards the SbM lessons:

From the observations of the researcher it was obvious that the students were well-behaved, which allowed the teacher to have structured and completed lessons. Most importantly, the teacher reported that she could see many positive reactions from the students. Most of these reactions were during the compositions of their SbM and the video projection of the electroacoustic composition, when she reported that *"I was impressed by how quiet and focused everyone watched the second composition"* (Teacher EA, School F: 3/2/11). The focus and engagement of the students towards the second composition, could most probably relate to the fact that the composition was about the historic issue of Cyprus, being divided in two. This supports that material, which relates to students, or offers them the opportunity to think about cultural or social issues, can engage them more easily in the learning process (see p.26-27).

Appropriate learning material

It was reported by the teacher that the material provided was efficient and clear. As identified by the previous case studies, visual material was extremely helpful for the students to understand the lessons. Thus, more videos were projected during this Case study 6 to help students distinguish the differences between the different genres used in the SbM lessons. Most importantly, the acoustic material in combination with the visual material gave a clearer idea to students on how composers work and develop in the contemporary music world. The teacher commented that the visual projections during the last lesson were emotive, as one of these related to the national problem of Cyprus. She added that these projections offered new knowledge to students as well as to her about these types of music; she felt *"like a student again"* (Teacher EA, School F: 3/2/11).

In comparison with Lesson plan 7, Lesson plan 8 used audio-visual material to engage students. However, it was shown that the sub-cultures of each school affected the results of these lessons. In contrast with Case study 5, in Case study 6 the students were focused on the projection of the audio-visual material and were engaged with it. This could also relate to the second audio-visual composition, which focused on the Cypriot national problem, but it was primarily affected by the students' status and the school's sub-culture.

Teacher's Training/ Confidence

As identified earlier, the teacher reported that the material provided and the structure of the lesson plans was efficient. All lessons were appropriate to be used at any given moment without any help from the researcher, apart from the lesson with the music software.

In all three secondary case studies the lesson with the 'Audacity' software was co-taught by the researcher and the teacher. Specifically, the teacher was explaining the definitions of the tools available in the software and the researcher was using the software to show these tools in practice. The teacher reported that she would feel confident to teach this lesson after spending some time on her own experimenting with the software. She reported that *"I would dare it, but for sure I should be involved (with it) more hours at home for me to dare it. That is to feel confident. I am still at the beginning, I've learned a few things but I haven't worked on the programme. If I was working on it more... yes I could teach it in*

the classroom” and “... I don’t think this specific software is very difficult for anyone to work on it, on his own” (Teacher EA, School F: 27/1/11).

She also added in relation to training that it would be good to have some training by the MoEC at a professional level, without the students being present. She mentioned that she had received some training from the MoEC for the music project “On air”, which also used the music software ‘Audacity’. However, the training of the teacher was simultaneous with the training of the students, introduced by an ‘expert’ during one teaching period. As this teacher of Case study 6 said, it was like an “informative session” rather than a training one (*Teacher EA, School F: 27/1/11*).

Teachers in Case study 5 and 6 had the same in classroom “training seminar” for the use of this software. However, the teacher of Case study 5, due to his music technology background, did not need any additional help or training for the specific software, whereas the teacher in Case study 6 did not have adequate confidence or knowledge to teach it yet on her own in the classroom.

Educational/Technological benefits of the SbM lesson

One of the main research questions, the identification of educational and/or technological benefits offered to students through the teaching of SbM lessons, was thoroughly examined and observed by the researcher, but also reported by the teacher. It was observed that the activities of the lessons provided opportunities for the students to collaborate, communicate and present their work in the classroom. As the teacher reported in some activities *“the whole classroom worked as a group”* (Teacher EA, School F: 27/1/11) and students exchanged ideas and shared opinions. Other activities allowed them to learn individually and as reported from the teacher *“during the soundwalk they worked alone, observing alone and then discussing it inside the classroom. There was a good discussion inside the classroom, they listened to each others’ opinions and had the chance of discussing inside the classroom what they did outside”* (Teacher EA, School F: 13/1/11). These activities supported a collaborative spirit amongst students and an increase of their presentation and communication skills, as they presented their findings in front of the whole classroom.

Moreover, during the creative activities, the compositions allowed them to think and judge musically and make their own decisions. In these cases, learning was personal and

they felt proud of the results. Moreover, the listening activities helped them focus more and develop listening skills as well as their concentration. Most importantly the teacher identified that the lessons were interesting, attracting the students' attention and engaging them in the learning process, thus providing the opportunity to all students to participate in the lessons. All these findings link back to the goals of the New Music Curriculum (2010), which aims to develop the musical skills of the students individually, along with active listening skills, a collaborative spirit, responsibility, discipline and communication.

Both the researcher and the teacher also noted technological benefits. According to the teacher, the lessons in which the Audacity software was used were very engaging for most of the students, as most of them are familiar with technologies. This is particularly true for older students, and this case study had students between 13-14 years old. Contrasting with Case study 4, where the students were younger and many of them had difficulties in using technologies, these older students were much more fluent in relation to technologies. By the end of the lesson, many of the students expressed their interest in downloading the software at home and surprisingly one of the students was already using this software at home.

This particular student was using this software to compose his own music at home and he was thrilled to discover new ways of composing with sound. Thus, it was identified that these lessons could bridge the gap between the music that students created at home and the music learned in the classroom. Teachers need to be more informed about the musical tastes of their students and support them during their music teaching (Lamont, et al, 2003) (see p.45).

Inclusiveness in the music classroom

The lessons used in Case study 6 were in reality the revised lessons from all case studies, aiming to provide the highest level of thinking and creativity in the music classroom. The activities were evaluated by all the previous case studies and offered a range of difficulty levels that could ensure inclusive education. As identified above, both the researcher and the teacher observed that all students participated at some point in all lessons. The nature of the activities allowed every student to contribute to the lesson at their own level. Especially during the first two lessons that were considerably easy for the age of the students, as reported by the teacher, even the NTM students, participated and understood the lesson.

The lesson involving technology was more demanding, but even during this lesson it was also seen that all students were concentrated and understood the basics of the software and the possibilities of sounds. This correlates to the research of Williams (2011), focused on the non-participant students in the music lesson, who found that these students can be engaged in the music lesson through creative activities which use technology (see p. 80).

Freedom of students in the classroom

The theme that emerged as the most interesting one in Case study 6, similar to Case study 5, was freedom. Freedom was underlined by the teacher as the kinetic force that drove students to participate, express themselves and create their own compositions. Since the very first lesson, the teacher emphasised that this *“freedom of movement of the soundwalk allowed them to express themselves and discover at a personal level the sounds of the environment”* (Teacher EA, School F: 13/1/11).

During other activities, such as the sound experimentation with the objects they brought from their homes (Lesson plan 5), it was observed by the researcher that the freedom of discovering sounds that they could use in their sound-story was beneficial. It allowed them to expand their horizons to a new level and treat sound as a musical material beyond notes. The teacher also identified that “freedom” in the classroom made the students take more critical decisions about their own compositions, relating fully to Robinson’s (2001) idea that freedom is essential to promote creative learning (see p.76).

Timing of the SbM lessons:

Time was an issue reported by the teacher and observed by the researcher as a limiting factor. Even for some activities lack of time forced the teacher to stop the discussion in order to finish the lesson on time. Lack of time was reported by the teacher in relation to the recording of the compositions, for which she commented that it would be better for the students to hear the recorded compositions right after their recording session, not at the next lesson. However, this was not possible due to lack of time. Allowing more time to students could engage them even more in the compositional process of their SbM. The teacher reported that she would definitely try it again, and allow more ‘wait time’ to

students to take more informed decisions for the structure and the content of their compositions (see Fautley and Savage, p. 76).

Similar lessons/ addition to the curriculum

The teacher reported that she was familiar with SbM on some level, since she taught experimental music using objects to create sounds. Also, the “informative seminar” she had on the software Audacity offered her, a first experience with manipulating sound. As explained to the researcher, in her teaching of experimental music she used objects to create sounds but then structured them in rhythms. However, this is not exactly the same to the activities used during lesson plan 5, as the sounds were used to create a sound-story structured by the sounds themselves.

It was suggested by the teacher that a thematic unit named “Sound” should be included in the New Music Curriculum (2010), in which these lessons could be implemented. Especially for the lesson using the software, the teacher reported that at least three lessons covering recording, composition and editing of sounds should be included in the New Music Curriculum (2010), as these lessons were very interesting and engaging for the students.

Summary

The teacher of Case study 6 reported that she would try to teach these lessons in the future, after familiarising herself more with this music and the software. This would be possible even if she would work on her own without any guidance or training from the MoEC. The themes identified in this case study were very positive, and by the end of it, all the lessons created were tested, evaluated and considered as appropriate to be used in the music classrooms.

The students of this age (13-14 years old) were the most excited and interested in using music technology in the music classroom and the teacher recognised this. The SbM lesson plans are considered to be appropriate to create a link between the students’ music preferences outside of classroom and the music learned in school while enhancing the students’ knowledge about contemporary music. Again, ‘freedom’, ‘creativity’ and ‘the use

of technology' were the factors that attracted the students' attention and engaged them in the learning process.

The end of Case study 6 marked the end of Phase 2. Eight lesson plans were created in total, for which different levels of activities, techniques and ideas of SbM were used to educate students. These lessons aimed also to inform teachers about the possibilities and the educational, musical as well as technological benefits of SbM.

6.3.3. End of phase 2: Summary of the case study findings

Findings from Phase 2 revealed recurrent themes and issues affecting teachers and students when SbM lessons are implemented in the music classrooms. During open coding these themes were combined into *initial codes* to facilitate analysis as presented above. After the collection of all data from phase 3 and 4, the codes from Phase 2, 3 and 4 will be grouped into *categories* according to their relation to the lesson, the teacher and the students. These categories are then going to create '*concepts*', which will lead to the conclusions of the researcher and the generation of theory, as guided by the grounded theory approach.

The following section presents and analyses the findings from Phase 3 of the research.

6.4. Phase 3: Evaluation questionnaires of the secondary students and of their teachers

Phase 3 marks the end of the implementation of SbM lesson plans in the six case studies. During phase 3, the secondary students completing an evaluation questionnaire (questionnaire 4) (see p.124) evaluated the lessons in which they participated. The primary schools were considered as pilot studies and only participated in a small number of SbM lessons, thus did not complete an evaluation questionnaire. The secondary teachers who participated completed the same evaluation questionnaires, in order to have the chance to provide their opinions for their overall teaching experience. The findings from the evaluation questionnaires are summarised below.

Questionnaire 4: Evaluations from the students

At the end of each secondary case study, evaluation questionnaires were given to the secondary students. A 100% response rate led to the collection of data evaluating the students' experiences on each lesson. According to the level of the students, the lesson plans were amended and developed; in some of them there were extra lesson material added, whereas others were presented in more depth. The final design of the SbM lesson plans can be found in the Teacher's Information Pack attached to the thesis. The following table 6.12 shows the SbM lesson plans used in each level of the secondary case studies.

Table 6.12: The SbM lesson plans used in each level of the secondary case studies (schools D, E & F)

The lesson plans used for each level were:

Secondary level 1: Acoustic ecology (Lesson plan 4)

Real-world sounds in compositions (Lesson plan 5)

Music technology (Lesson plan 6)

Secondary level 2: Acoustic ecology (Lesson plan 4)

Real-world sounds in compositions (Lesson plan 5)

Music technology (Lesson plan 6)

Synthesised sound and image (Lesson plan 7)

Secondary level 3: Acoustic ecology (Lesson plan 4)

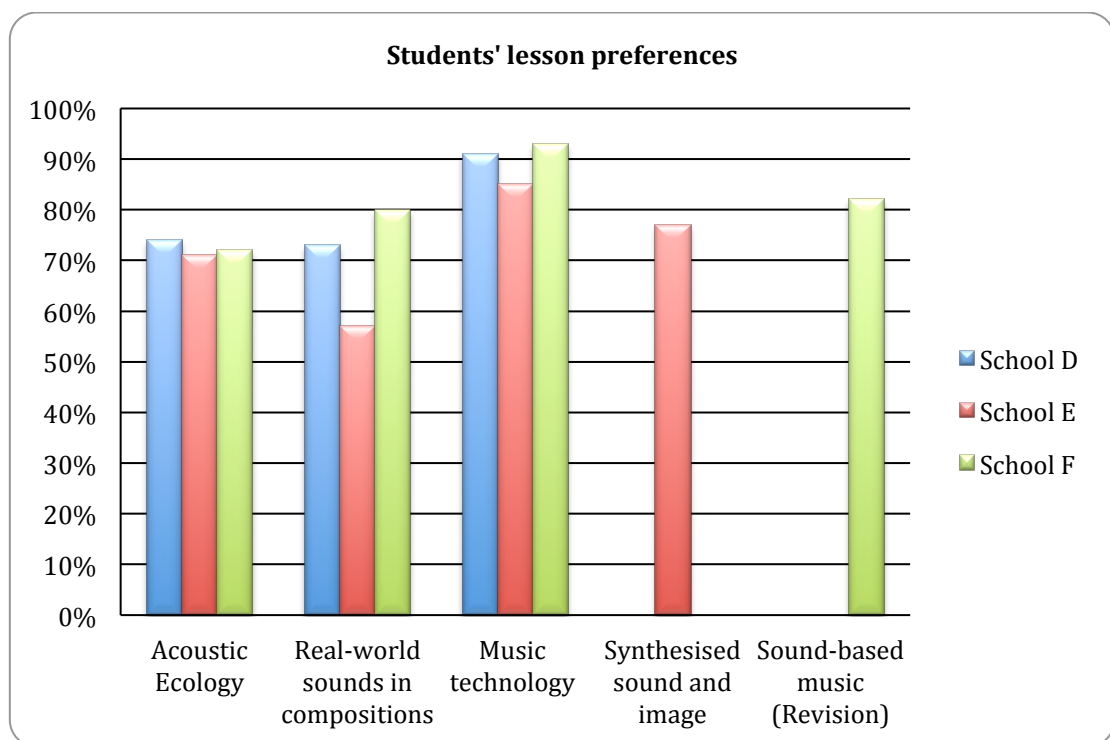
Real-world sounds in compositions (Lesson plan 5)

Music technology (Lesson plan 6)

Sound-based music (Revision) (Lesson plan 8)

The evaluation questionnaires revealed that the lesson that was most enjoyed from all levels with 90% rating from the students was “Music technology”. The findings for the other lessons varied according to classroom level. In Level 1 and 2 the least enjoyed lesson with 73% and 57% respectively was ‘Real-world’ sounds in compositions, whereas in Level 3 it was the ‘Acoustic Ecology’ with 72%.

Figure 6.5: Secondary students’ lesson preferences



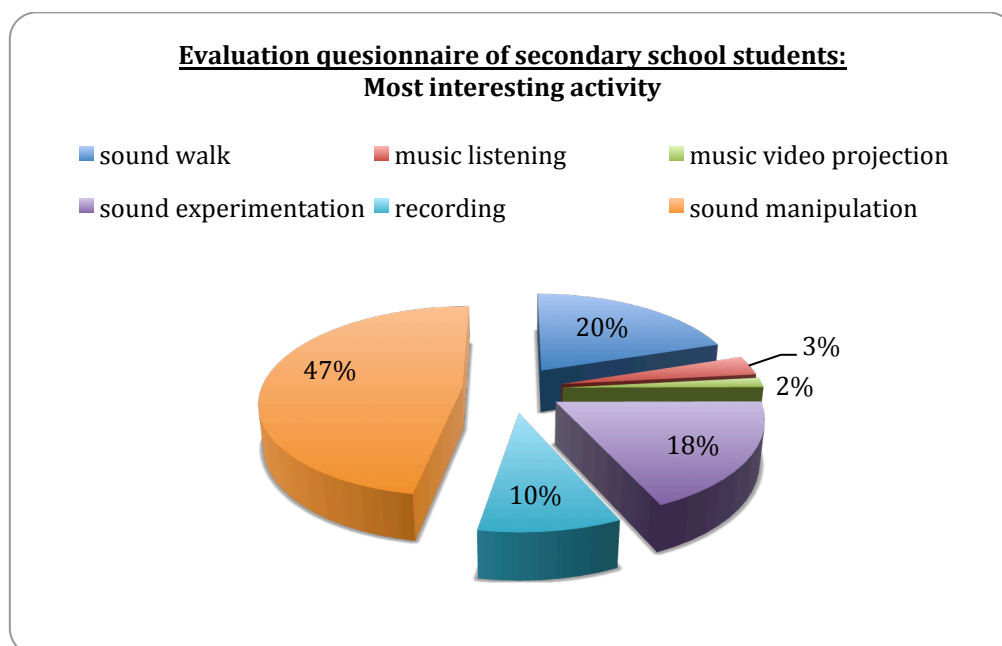
The findings regarding the most enjoyable activities were supporting the previous results, showing ‘Sound Manipulation’ as the most enjoyed activity with 90% and ‘Sound Experimentation’ and ‘Recording’ with 87%, which all activities were included in the “Music technology” lesson. With a rating of 75% and unanimity in all levels ‘Soundwalk’ was the least enjoyed activity. Interesting was the fact that in Level 1 all the activities, except that of the ‘Soundwalk,’ had the highest ratings from all levels.

The students were asked to rate the activities revealing which ones they would like to learn more about in the future, and once again 'Sound Manipulation' was at the top of the list with 88% rate, with a new entry 'Working with Music Software' at a rate of 90%. Activities, such as 'musique concrète', 'sound compositions', electronic music' and 'contemporary music' were at a rate of 80% and above, leaving 'Sound', 'Soundscape' and 'Recording' between a rate of 68% and 75%.

At the end of the questionnaire the students were asked to choose their favourite activity and justify their choice; 47% of the students chose 'sound manipulation', 20% 'soundwalk', 18% 'sound experimentation', 10% 'recording' and less than 5% 'music listening' and 'music video projection'.

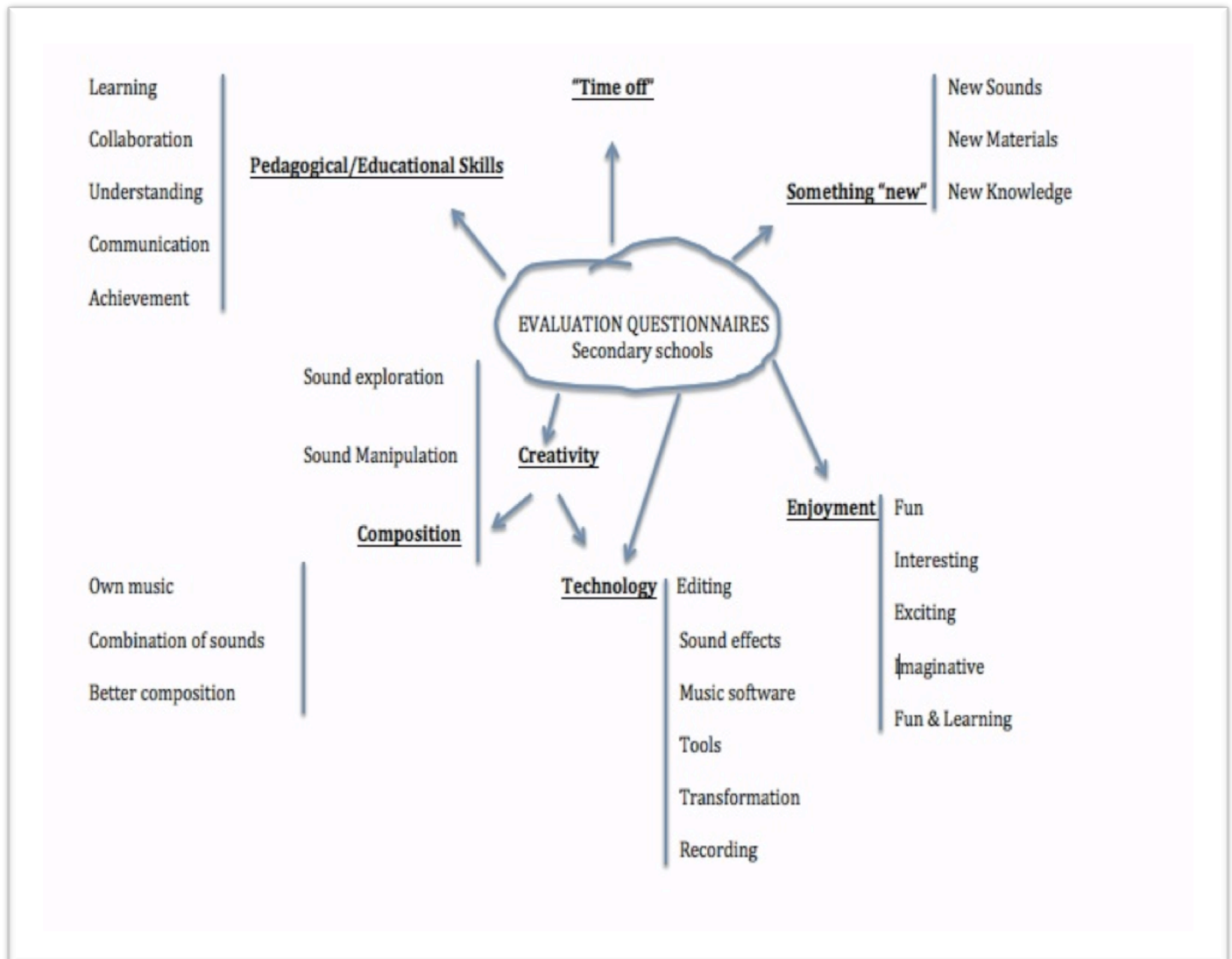
It is particularly interesting that, although the Soundwalk activity was voted as the least enjoyed activity overall, in the question regarding the favourite activity it was found to be the second favourite one. This can be justified by the fact that students, who chose the Soundwalk as their favourite activity, gave it a high rating, but most of the times it was the same with their rating on Music technology.

Figure 6.6: Evaluation questionnaire of secondary students' activities: Most interesting activity



The findings from the open-ended question included in the evaluation questionnaires were grouped using open and axial coding. The following figure 6.7 shows the open and axial coding, which divide the findings into the emerging themes analysed below.

Figure 6.7: Open and axial coding of evaluation questionnaires of secondary students



The following section defines the themes that emerged after open and axial coding and pinpoints the importance of these for students. Table 6.13 presents the themes categorised from the student's evaluation questionnaires.

Table 6.13: Students' evaluation themes

The reasons described by the students were identified as having common themes in:

- Enjoyment of the lessons
- Creativity in the music lesson
- Technology usage
- "Something new" in the learning process
- "Time off" regular class
- Educational skills of the students

Enjoyment of the lessons

A large number of students reported that activities were '*fun*'. In many occasions and for different activities students mentioned that they chose a particular activity for being *enjoyable*. Comments on enjoyment were most commonly made on 'Sound manipulation' and the use of the music software "Audacity", which gave them the opportunity to "*have a good time while learning*" (School E: Student n.3) and experiment with the sounds.

The use of sound effects was particularly *exciting* for the students as well as *interesting*, and many commented on it as enjoyable and at the same time educational: "*The sound manipulation with the use of Audacity (was the most interesting activity), because I believe it is one of the most useful tools for music. Also we can add sound effects which were fun*" (School E, Student n. 3).

Another student commented that 'Sound Experimentation' gave students the opportunity to use their *imagination* in order to create something interesting and fun. This allowed students to be creative and enjoy the lesson at the same time. Moreover, the activities were *exciting* and *new*, something which attracted their attention. Comments on excitement were usually made on the 'Soundwalk' activity, as they discovered sounds that they did not realise they could hear before, in contrast to the quantitative results according to which "Soundwalk" was the least enjoyed activity.

Creativity in the music lesson

Enjoyment was particularly linked with creativity. The students, who chose the activities of 'Sound Experimentation' or 'Sound Manipulation', mentioned their creativity as well as the ability to "create *something new, beautiful and right*" (School F, Student n.12). Themes on creativity are further grouped into 'Composition' and 'Technology'.

Composition

Students reported that their choice of favourite activity was influenced by the fact that they created "their own music". The 90% of the students that chose 'Sound Experimentation' as their favourite activity commented that the reason was the creation of their *own sounds* and then their *own music*. Students that chose 'Sound Manipulation' reported that the most interesting part was the *combination of the sounds* and the creation of "*better compositions* through manipulation" (School F, Student n.10). The activities of 'Sound Experimentation' were mentioned by some students as an opportunity for *expression*, choosing the sound material used for the compositions and recordings, and in particular allowing students to choose the objects and sounds that *represent* them (School F). Feelings of *achievement* were also apparent in comments of Level 1 students that reported that "*We managed to create our own sounds!*" (School D, Student n. 7).

Technology

Many students made specific reference to technology. Most Level 3 students commented it in relation to the music software Audacity. The use of technology was particularly exciting for the students and it offered *creative* opportunities as well as excitement while using the sound effects. A Level 2 student commented that music technology is "*one necessary tool for music*" (School E, Student n. 3), while another Level 3 student reported that it was important that they could compose their composition "*exactly how we wanted it*" (School F, Student n.17).

Many students identified that the use of technology was particularly interesting for *editing* their sound materials and could be used to *transform* their sounds. Some students acknowledged that technology could be *very enjoyable* and *fun* as well. The techniques of speed change of sound materials and addition of sound effects in the

activities of 'Sound Manipulation' was particularly fun for the students and more than 50% of them on all levels have commented on this.

Most interestingly, a student commented on the choice of the 'Sound Manipulation' activity as the most interesting, because he/she recognised that this technology could be used in "*children stories to change the voice of the characters*" (School D, Student n.13). This link between in-classroom activities and lessons with real life applications is particularly important, as students have real life examples.

"Something new"

The "*something new*" factor was also apparent in the evaluation reports of the students. Students kept repeating in their reports that the activities chosen had something *new* to offer:

"We learned many things" (School F, 8),

"We experimented with something new" (School D, 10),

"We didn't know about it before" (School D, 11).

Regarding activities, such as 'Sound Manipulation' and 'Sound Experimentation' students made reference to their *new experience*. More specifically, students in School F commented on the *new software*, in relation to creativity, composition, technology and enjoyment. Students choosing 'Soundwalk' mentioned it as a new experience in the school environment, while another student highlighted the "new" factor in the 'Electronic music' activities, which he/she had never experienced before (School F, 9). Therefore, the "something new" factor is connected to *experience*.

Educational skills:

All the above offered many opportunities to students not only in relation to music but also for developing their educational skills. Many students reported that the activity of 'Sound Experimentation' and 'Recording' allowed them to *collaborate* with their classmates, and *communicate* between them in choosing their material: "*We had the opportunity to work in groups and experiment on our own sounds*" (School F, 13). Another student also added that "*everyone had the chance to express their opinion*" (School F, 2).

“Time off”

There was a small number of students in School E that chose an activity because it provided them the opportunity of a *time off* from regular classes. These students chose ‘Soundwalk’ as their favourite activity, while the other 10% chose “Video Projection”. The justification for their choice was that they were not asked to do something, so it was a time spent on having fun. The comments of these students were particularly small in length and one of them did not even provide a title for the activity and just reported that: “*we were taking a walk in the school*” (School E, 2). This was a phenomenon usually observed in other researches by non-participant students (Williams, 2011), but it must be noted that these students, when engaged in activities involving ICT, were very active.

Summary

The themes identified during the categorisation of the students’ evaluation questionnaires had similarities with the themes identified throughout the case studies, after the codification of the interviews of the teachers and the observations of the researcher. Students evaluated these lessons based on the enjoyment of their experience and it was very important that students reported that the lessons could offer something new, something enjoyable and engaging.

The following section defines the themes emerged after the codification of the teachers’ evaluation questionnaires, which are going to be combined with the students’ evaluation questionnaires as well as with the themes identified throughout the case studies.

Evaluation questionnaires: teachers’ preferences

Each secondary teacher completed an evaluation questionnaire at the end of his or her case study. There was a 100% response rate in these questionnaires and it was reported that the most interesting lesson was “*Sound Manipulation*” while the most creative lesson was “*Sound Experimentation*”.

It was particularly noticed that all teachers justified their answers, reporting that the specific lessons triggered the students’ interest and engaged them in the learning process. It was also identified that all teachers would try again in the future to deliver the “Sound Manipulation” lesson in combination with the ideas of the other sound-based lessons. Once again the teacher of Case study 5 reported some priority issues of

implementing new lessons, which are not included in the curriculum. However, as he explained it would be ideal for the SbM lessons to be introduced to the students in order for them to create a knowledge basis on all music types, as per the aims of the secondary music curriculum. In addition, this teacher reported in relation to the use of technologies in the music classroom, that *“if you have something, like a technology (in the classroom) it is a pity to have it just sitting there, even if you don’t know (how to use it) you have to learn how to do it”* (NN, School E, evaluation questionnaire).

It was revealed that there is consistency in the lessons that were selected as being the most interesting and most creative by the teachers, in comparison to the students’ preferences. The lessons utilising technology were the most engaging for both students and teachers, and this is an important finding of the evaluation questionnaires.

6.4.1. End of Phase 3: Summary of the evaluation questionnaires and interviews

Selective coding

After collecting all the data from the first three phases, the researcher, using *axial coding* as guided by the grounded theory approach, categorised the findings into themes in relation to the teacher, the student and the lesson perspective. Table 6.14 shows this codification. Each theme identifies the case studies that emerged in, facilitating the comparative analysis of the case studies.

It is identified that some of the themes were consistent and were observed in all the case studies, whereas other themes, such as “equipment” and “musical benefits”, were only singularly reported from teachers. The themes, which were observed in all case studies, are “enjoyment”, “learning material and structure” and “educational benefits”. Tables 6.15, 6.16, and 6.17 present the themes in relation to each case study, according to their category. After the categorisation of the themes, the researcher after *selective coding* identified the main concepts that were identified in all three phases. These concepts guided the “Respondent Validation” questionnaires described in detail in the following section.

Table 6.14: Codification of themes in relation to the 'lesson', 'student' and 'teacher'.

The categories and the themes included in each category are the following, distinguishing the case studies that were emerged in:

Lessons:

1. Enjoyment (all case studies)
2. Learning material /structure (all case studies)
3. Time issues (case studies 2, 5 & 6)
4. Creativity (case studies 4 & 5)
5. Similar lessons (case studies 3, 4, 5 & 6)
6. New chapter/ priorities (case studies 4, 5 & 6)
7. Equipment (case study 5)
8. Inclusive material (case studies 3, 4, 5 & 6)

Teacher:

1. Curriculum knowledge (profile questionnaires)
2. Own ideas/ beliefs (case studies 2 & 5)
3. Teacher's training/ CPD (case studies 4 & 6)
4. Experience/ preparation/confidence (case studies 2 & 5)
5. Time issues (case studies 2 & 6)
6. Teachers' background (case studies 2 & 5)
7. Communication with MOEC (inspector interview & case study 4)
8. Use of ICT (case studies 4, 5 & 6)
9. Enrichment to their own knowledge (profile questionnaires & case study 6)

Student:

1. Freedom (case studies 5 & 6)
2. Reactions/ behaviour (case studies 4 & 5)
3. Educational benefits (all case studies)
4. Musical benefits (all case studies)
5. Technological benefits (case studies 4, 5 & 6)
6. Inclusive education (case studies 3, 4, 5 & 6)
7. Creativity (case studies 4, 5 & 6)
8. "Time off" lesson (evaluation questionnaire case study 5)
9. Enjoyment (all case studies)
10. "Something new" (evaluation questionnaires case studies 2, 4, 5 & 6)

Table 6.15: Findings relating to the “Lesson”


Lesson related findings in each Case Study affecting SbM implementation						
Case studies	Case study 1	Case study 2	Case study 3	Case study 4	Case study 5	Case study 6
 Findings						
Enjoyment	√	√	√	√	√	√
Learning material/ structure	√	√	√	√	√	√
Time		√			√	√
Creativity				√	√	
Educational benefits	√	√	√	√	√	√
Musical benefits						√
Technological benefits				√	√	√
Similar lessons			√	√	√	√
Lesson priorities				√	√	√
Equipment					√	
Inclusiveness			√	√	√	√

Table 6.16: Findings relating to the “Teacher”



Teacher related findings in each Case Study affecting SbM implementation.						
Case study	Case study 1	Case study 2	Case study 3	Case study 4	Case study 5	Case study 6
 Findings						
Own ideas and beliefs		√			√	
Training and CPD				√		√
Experience/ background/ preparation/ confidence		√			√	
Time issues		√				√
Communication with MoEC				√		
Use of ICT				√	√	√
Enrichment to their own knowledge	√	√	√			√

Table 6.17: Findings relating to the “Student”

Student related findings in each Case study affecting SbM implementation						
Case study	Case study 1	Case study 2	Case study 3	Case study 4	Case study 5	Case study 6
 Findings						
Freedom					√	√
Reactions/ behaviour				√	√	
Educational benefits	√	√	√	√	√	√
Musical benefits	√	√	√	√	√	√
Technological benefits				√	√	√
Inclusive education			√	√	√	√
creativity				√	√	√
Time “off”					√	
Enjoyment	√	√	√	√	√	√
Something new!		√		√	√	√

6.5. Phase 4: Respondent Validation

Phase 4 marked the end of the fieldwork of the research and the beginning of the respondent validation data collection. The findings of the previous three phases, after selective coding, were used to construct a respondent validation questionnaire (see p.124), which was taken back to the participant teachers. The teachers were asked to rate the findings in relation to their experience in the case studies and add any comments.

The questionnaire was divided into 5 sections in relation to the findings from all the case studies. The selective coding of the categories revealed the following themes:

1. Pedagogical benefits of SbM
2. Teachers' background
3. Teachers' training and CPD
4. Technological equipment
5. National Initiatives

The following table 6.19 identifies the issues related in each category, and the findings are discussed below.

Table 6.18: Respondent validation themes

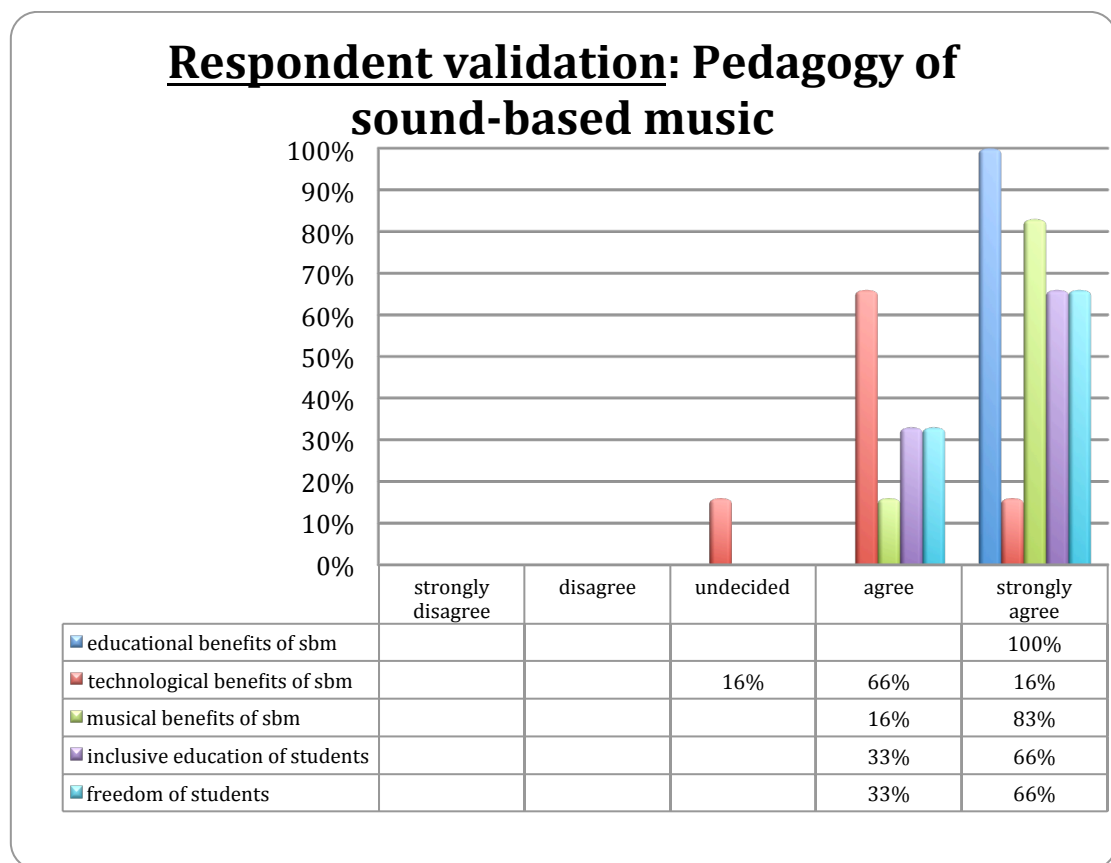
These sections are in relation to:

1. Pedagogy of SbM:
 - i. SbM lessons offer educational benefits to the students
 - ii. SbM lessons offer technological benefits to the students
 - iii. SbM lessons offer musical benefits to the students
 - iv. SbM lessons offer inclusive education
 - v. SbM lessons offer freedom to students
2. Teacher's background:
 - i. Teacher's university background influences the teaching of sbm in the music classroom
 - ii. Teacher's confidence in teaching SbM influences the choice of sbm as a potential lesson
3. Teacher's training and Professional Development:
 - i. CPD is critical for teaching sbm
 - ii. Curriculum and traditional pedagogical tools training influence the teaching of sbm in the music classroom
4. Technological equipment:
 - i. Access to equipment with the proper musical software is essential for the integration of sbm in the music classroom
5. National initiatives:
 - i. Communication between the Ministry of Education and the music teachers is critical in promoting the teaching of sbm in the music classroom

6.5.1. The findings of the Respondent Validation questionnaires

In relation to the benefits of the SbM lessons introduced in the music classroom, the teachers unanimously agreed that these lessons offered educational benefits to the students. 83% of the teachers agreed on the lessons being able to musically benefit students and 66% that the lessons were suitable to provide an inclusive education and a sense of freedom to the students. A further 66% agreed that the lessons provided technological benefits to the students, while only 16% were undecided on whether these lessons offered these benefits or not.

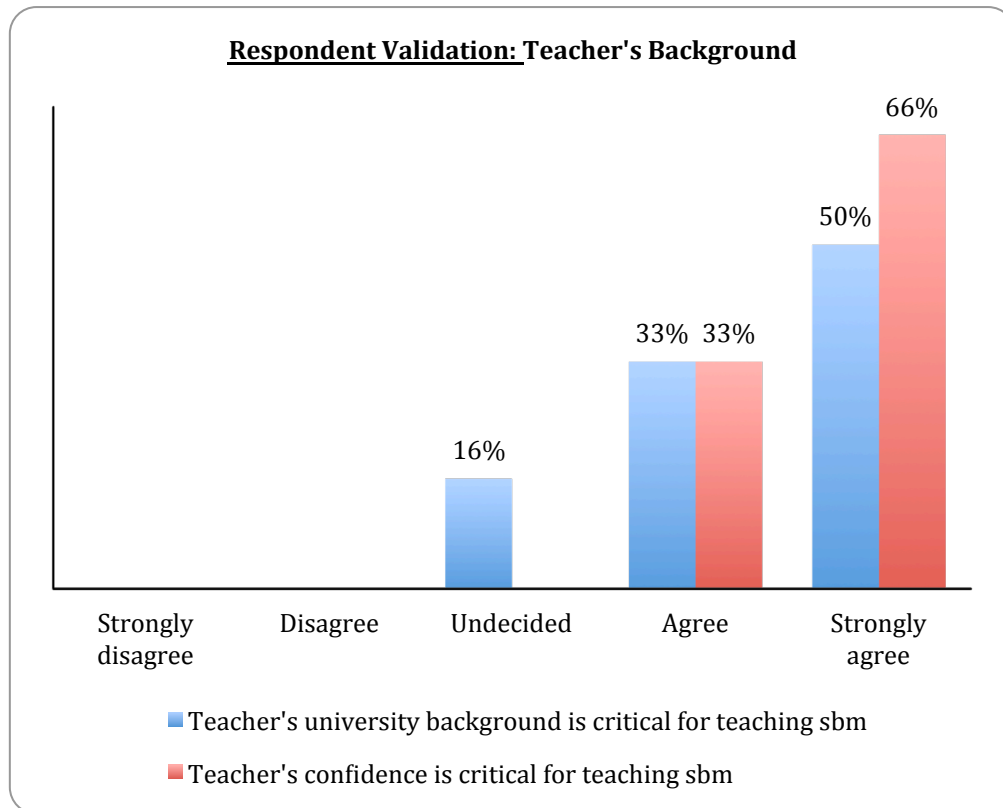
Figure 6.8: Respondent Validation: Pedagogy of SbM



The findings from the case studies revealed that the teachers' background was critical for teaching SbM. In the respondent validation questionnaires 50% of the teachers strongly agreed with this finding. Moreover, it was confirmed by 66% of the

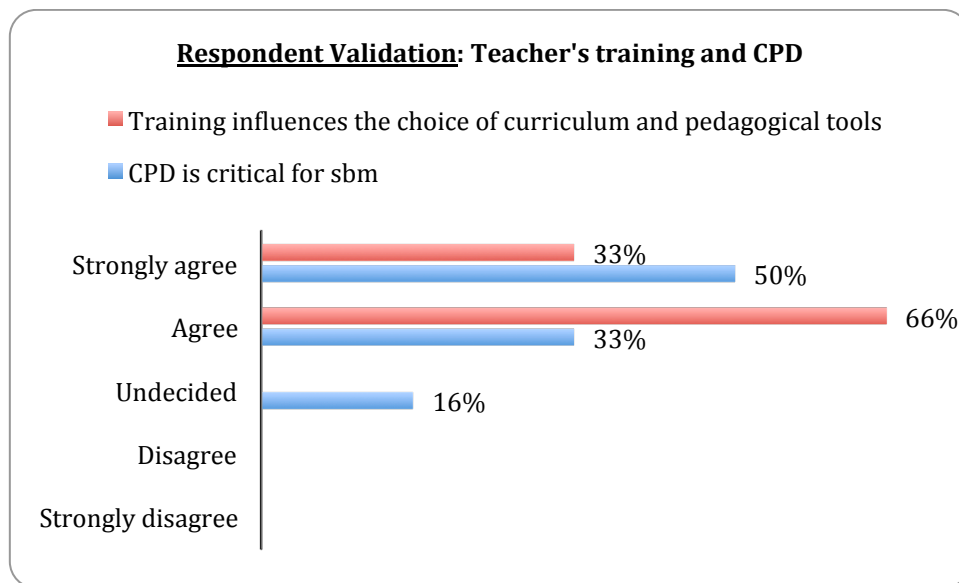
teachers that teachers' confidence was also critical for teaching SbM in the music classroom.

Figure 6.9: Respondent Validation: Teacher's Background



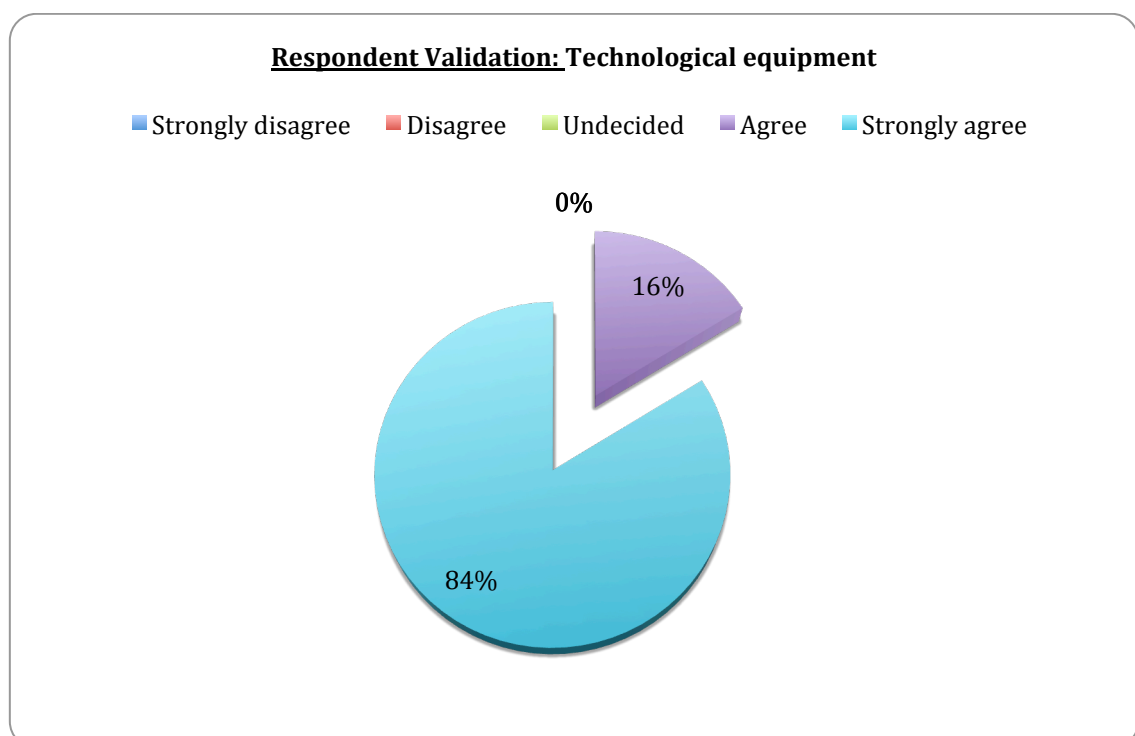
66% also agreed that teachers' training influenced their choice of curriculum and pedagogical tools. In addition, the findings identified that CPD of the teachers was critical for the teaching of SbM as 50% of teachers strongly agreed with that, whereas 16% were undecided.

Figure 6.10: Respondent Validation: Teacher's training



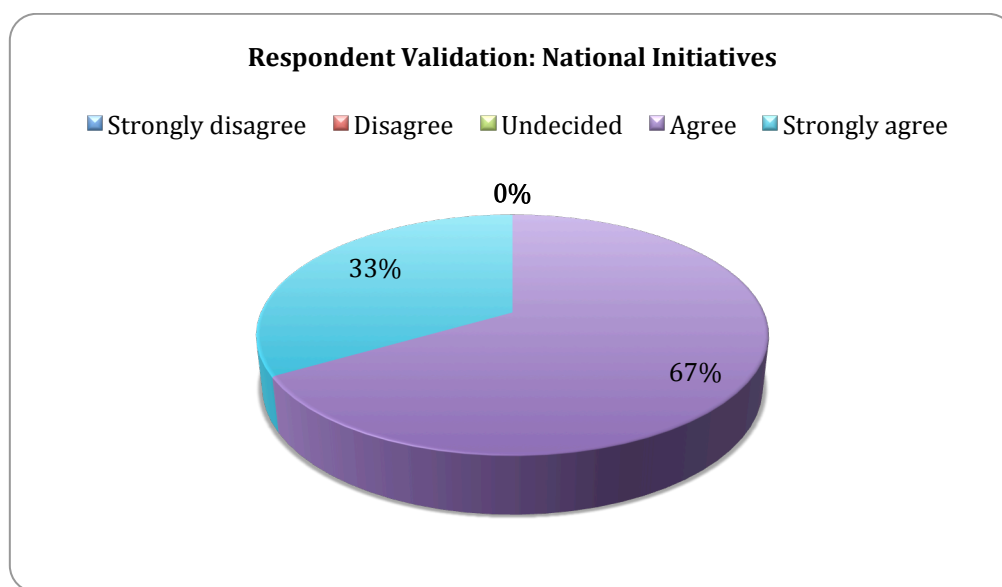
In relation to the technological equipment, it was suggested by 84% that access to working equipment with the proper musical software was essential for teaching SbM.

Figure 6.11: Respondent Validation: Technological equipment



In relation to the lack of communication between the music teachers and the MoEC of Cyprus, 67% of the teachers agreed that this was a significant factor for the inadequate promotion of teaching SbM in the music classroom.

Figure 6.12: Respondent Validation: National initiatives



6.5.1. End of Phase 4: Summary of validation questionnaires

In general, the participant teachers agreed with all the findings presented to them. They particularly commented on the lack of communication and training by the MoEC, which affects SbM teaching. A teacher reported that *“The lack of communication with the Ministry of Education creates a confusion”* (Teacher AK, School C: 12/1/12) not only for SbM but in several teaching matters. The same teacher commented on the pedagogical benefits of SbM towards the students, reporting that *“The students enjoyed it and asked for it again! I try now to include it in all my curriculum levels”* (Teacher AK School C: 12/1/12.).

Another teacher commented on the enjoyment of the students, highlighting that *“Enjoyment is obvious especially when combined with technology and when students*

create themselves” (Teacher EA, School F:18/1/12). Finally, it was also reported that with the “proper support, students will engage with this music and with the proper training from the Ministry of Education with seminars, there will be a proper education of SbM” (Teacher EP, School D:13/1/12).

6.6. Summary of research findings from all phases

The Findings and Analysis chapter identified the data collected during the implementation of SbM lessons in the music classrooms of Cyprus. Phase 1 of the research allowed for themes to emerge, which needed to be taken into account for the preparation of the SbM lesson plans. These themes were researched in more depth during Phase 2, which was the implementation of the SbM lesson plans, and allowed for more themes to emerge. These themes were researched using action research throughout the six case studies, until they were considered as appropriate for implementation in music classrooms in general. Phase 3 allowed secondary school students and their teachers to evaluate the lesson plans and choose their favourite ones. Phase 3 allowed themes to emerge, which were taken back to all participating teachers for the respondent validation process during Phase 4.

To sum up, Phase 1 identified the background of the research. Phase 2 identified the initial codes of the findings throughout the six case studies. Phase 3 collected evaluations of the SbM lesson plans, and following axial coding all the findings were grouped into categories on the basis of the lesson, student and teacher perspective. Phase 4, using selective coding, identified concepts from each category, and validated these using respondents’ validation questionnaires.

All findings are presented below in relation to the three main categories (lesson, teacher, students).

The key findings relating to the SbM lessons are:

- Lessons on sound manipulation and experimentation were the most engaging and enjoyable for both teachers and students. This promoted both the use of ICT in the music classroom and learning in relation to SbM
- Both teachers and students enjoyed the SbM lessons.
- The structure and material of the SbM lesson plans were clear and understandable and teachers could achieve their aims and objectives.
- Issues relating to time can affect the teaching of SbM lesson plans.

- The SbM lessons promoted creativity in the classroom thus engaging even the non-participant students.
- Through the use of creativity and a range of difficulty levels in the SbM lesson plans, inclusive education was promoted.
- New chapters in relation to SbM lessons could be included in the music curriculum, as suggested by the teachers.
- The use of the available technological equipment in the music classroom helped to achieve the objectives of the SbM lesson plans.

The key findings relating to the teachers are:

- Teachers' knowledge bases and training is essential for the teaching of SbM, and a better communication with the MoEC could support this.
- SbM lessons should and could be included in the music curriculum after proper training of the teachers and the supply of the appropriate equipment in the music classroom.
- Teachers' concerns in relation to curriculum priorities and time, beliefs and confidence influence the implementation of SbM in the music classrooms
- SbM lessons contribute to the enrichment of teachers' own knowledge thus promoting lifelong learning and CPD.
- Teachers have taught similar lessons in the past but did not link these with SbM.

The key findings relating to the students are:

- SbM lessons can offer educational, technological and musical benefits to students, engaging them in creative tasks.
- The implemented SbM lessons provided an inclusive education in the classroom.
- The SbM lesson plans supported students' freedom of experimentation and exploration.
- The students enjoyed the SbM lesson plans because these were creative, fun and offered "something new".
- Some students considered the lessons as a "time off" from regular music lessons, which was an interesting finding.

Chapter 7: Key Findings, Recommendations and Future Research

7.1. Summary of the research

This interdisciplinary research in the areas of music and education investigated the implementation of SbM lesson plans in the music classrooms of Cyprus. This research is considered the first research in the area of SbM taking place in Cyprus and thus it was difficult to predict the results with certainty. Adopting a mixed methodology, the research produced positive and beneficial outcomes, which support the government policies and the national initiatives. The researcher evaluated these outcomes through a series of questionnaires, interviews, observations, tests and visual data, identifying key themes, which related to a teacher, student and lesson perspective. These themes will provide the answers to the research questions identified in the introductory chapter.

Table 7.1: Research questions

- | |
|--|
| <ol style="list-style-type: none">1. What are the prerequisites for SbM lesson plans to be implemented in the New Music Curriculum (2010) of Cyprus?2. How do these SbM lesson plans influence the teachers and the students and which are the benefits of such an implementation, if any?3. Are teachers willing to teach SbM as part of the New Music Curriculum (2010) and can this promote SbM amongst young people? |
|--|

The main aim of this research was to create a set of SbM lesson plans that would be appropriate for the music classrooms of Cyprus. These lessons would assist the teachers in teaching SbM as well as educating the students in understanding and accessing SbM in the future. The literature review identified that there are specific learning theories which can guide these lesson plans in achieving the learning outcomes suggested in the New Music Curriculum (2010) of Cyprus. In creating these lessons, the need to identify the appropriate SbM material was acknowledged, thus the researcher examined the material in relation to the three key areas of the music curriculum of Cyprus, which are

listening, composing and performing. These three areas, in combination with the learning theories identified, guided the creation of eight SbM lesson plans. The eight lesson plans, during 19 lessons in total, were tested in six schools, with six teachers and 117 students. The researcher identified themes in each case study, as discussed in the “Findings and Analysis chapter”, which revealed that there is a connection between them.

The researcher followed the purposive sampling strategy in order to investigate typical as well as interesting or extreme instances in relation to the students, the teacher and the school. This sampling strategy allowed comparison between case studies with view to identify any restraints that would affect the implementation of SbM lessons in public schools of Cyprus. In general, it was shown that the teachers’ gender, age or years of teaching did not influence the delivery of the SbM lessons. Additionally, the classroom size did not affect the teaching of the specific eight SbM lesson plans.

However, the research identified that there are issues, which affect the implementation of the SbM lesson plans in the music classroom, and these issues relate to teachers’ background and concerns, students’ behaviour as well as the school’s equipment. Nonetheless, the case study comparison also revealed that SbM lesson plans can be beneficial to both students and teachers regardless of these issues. The key findings of the research are discussed below together with recommendations.

7.2. Key Findings of the research and recommendations

Students’ reactions revealed that SbM lessons can offer enjoyment in the music classroom, and be “something new” outside the norm of the music curriculum

During the research, the students and teachers from all case studies confirmed that the SbM lessons were enjoyable. It was important for the researcher to identify the appropriate structure and content of the lesson plans that would engage the students in the learning process as well as being enjoyable. Many students were excited by the fact that the SbM lessons were “something new” outside the norm of the music curriculum, offering a new learning experience (see p.194). The SbM lessons succeeded in engaging students in the learning process, allowing them to feel free to explore, experiment and

experience new ideas in music. Enjoyment is particularly emphasised by Fautley and Savage (2007) as a factor that affects the learning of the students as well as the teachers' ability to deliver the lesson (see p.76).

Recommendations

New lessons, and especially innovating material such as SbM lessons, should be introduced in the music classroom even for a limited time. These lessons offer new experiences to the students and allow them to explore new possibilities and enjoy themselves. It is important that teachers have the opportunity to select from new and different material and introduce music that is closer to the students' music preferences. SbM lessons can offer this to students and, through the use of ICT for the teaching of SbM, students can develop the skills and knowledge to create their own music. The SbM lessons revealed a unique learning opportunity for teachers to implement their classrooms with lessons that are enjoyable, beneficial and engaging for their students.

The SbM lessons offer to students many musical benefits, including the opportunity to create their own SbM compositions

In many of the evaluation questionnaires gathered by the secondary students, the students replied that these lessons allowed them to create something unique, something new and original, which was exclusively their own. The SbM lessons allowed students to explore the possibilities of sounds and move beyond musical notes, introducing them to a new musical world. Primary students were excited by the fact that this music was able to capture real life and explore music beyond notes. Many secondary students by the end of the series of SbM lessons showed an interest in composing their own SbM compositions at home. The teachers unanimously agreed that this music can offer many benefits to the students and it should be part of the music curriculum, as it supports the curriculum's initiatives, aims and innovations (see p.225).

Recommendations:

The aim of the New Music Curriculum (2010) is to introduce all musical styles to students up to 16 years old, and as this research showed this has not been achieved yet. The innovations of SbM have not been introduced yet in the New Music Curriculum (2010), in spite of the fact that they can offer many musical benefits to the students and open their horizons to a world of sounds. It is important that lessons that support SbM

should be part of the revised music curriculum creating a new learning experience for the students. These lessons can promote different strategies for learning music, moving beyond the traditional music notation and leaning into the world of sounds.

SbM lessons offer many educational benefits to the students, both in primary and secondary education

The educational benefits observed during the implementation of the SbM lesson plans included presentation, collaboration and communication skills, and also problem solving skills, exploration and critical-thinking. Students explored the potentials of SbM especially during creative tasks of composition in groups. Working in groups they developed communication and collaboration skills, which allowed them to discuss and critically select sounds for their composition. This supports the notion of the “zone of proximal development” as identified by Vygotsky (1978), during which students can learn more when collaborating with others than by doing so alone (see p.70). Teachers particularly emphasised the educational benefits of these lessons for the students, as the activities allowed them to engage with the learning tasks and be creative. Engagement is considered as a key factor for learning (Reid et al., 1989) and an important element of the lessons (see p.70).

The SbM lessons allow students to be creative beyond notes, giving them the freedom for “trial and error” (see p. 76). It was also highlighted by the teachers that these lessons allowed students to be free, and explore in their own way the activities and find solutions (as supported by Robinson, 2001). It was important for the students to be free to test sounds and explore their potentials. Furthermore, some teachers also identified that these lessons offer an opportunity for cross-curriculum teaching and collaboration between subjects in both primary and secondary schools, especially to themes related to ecology.

Recommendations:

Teachers should allow students to be more communicative and free to explore all aspects of the lessons. The SbM lessons offered this freedom to the students and the teachers observed that more critical decisions were taken from the students themselves rather than guided by the teachers. Thus student-centred teaching was achieved which is one of the aims of the New Music Curriculum (2010). It is very beneficial for the

students to have the opportunity, through lessons like these, to explore their full music potentials. SbM lessons can offer students the opportunity to engage in the learning process, be creative and free to experiment with their work.

The SbM lessons offer technological benefits to the students through the use of ICT in the music classroom

The New Music Curriculum (2010) supports the use of ICT in the music classroom (see p.13), but, as shown during the research, not many teachers are confident using technologies for creative purposes. Even the participating teacher with a background in music technology (Case study 5) explained that the equipment available does not support the use of ICT in the music classroom, so the creative possibilities of ICT are rarely explored.

The SbM lessons created, used and explored the available equipment of the schools and utilised the freeware software “Audacity”, in order to explore the creative potentials of ICT and reach the government initiatives. It was particularly noticed that the lessons that integrated music technologies were the most enjoyable and the most engaging for the majority of the students and the teachers. The SbM lessons offered technological benefits to the students through the use of technologies, such as recording equipment and freeware software. Both the students and the teachers of the secondary school case studies selected the “Music technology” lesson as the most interesting lesson, with the most interesting activities and the one that students would like to learn more about in the future.

Recommendations:

The teachers and the MoEC should recognize that the SbM lessons can offer a great opportunity to students in using ICT, but can also support the aims of the New Music Curriculum (2010) for using as much as possible technologies in the music classroom. The SbM lessons implemented in schools suggest that with the use of freeware software and basic IT skills from the teachers, the students can engage in the learning experience and interact with music technology. The SbM lessons support the government’s attempt to promote the use of ICT in schools as well as the initiatives of the New Music Curriculum (2010) and can offer new learning opportunities to the students through the use of ICT.

The SbM lessons support the initiatives of MoEC

The lessons proved to support many of the MoEC's initiatives and aims, not only in relation to the use of ICT in the music classroom, but also in relation to the modernisation and creation of a unified curriculum as well as the promotion of Life Long Learning. The lessons were not only beneficial for the students, but also for the teachers. The participating teachers stated that the SbM lessons educated them as much as they educated the students. The lessons offered new learning possibilities and new ideas of how to introduce SbM to students as well as to adults with no prior knowledge. This research showed that this happens, because the lessons include all the necessary theory, along with activities which are necessary to provide a fundamental education around SbM.

Moreover, the structure of the SbM lessons follows the unified curriculum supported by the MoEC. The lessons create a link between primary and secondary education and support the continuation of learning between educational cycles (see p.23). Additionally, the content of the lessons introduces new ideas on how to use sound for the modernisation of the New Music Curriculum (2010). Another important element of the SbM lessons is that they can support cultural awareness and expression, as this is considered one of the key competencies of the European citizen (see p.16). The lessons offer students new ideas for using sounds and expressing themselves through music. Furthermore, these lessons support the three key areas of the music curriculum relating to listening, composing and performing, offering the opportunity to students to experience all three areas through creative activities and tasks.

Recommendations:

SbM lessons can offer much to the teachers as well as the students if implemented in the music classroom. Teachers felt that these lessons could offer them new ways of teaching not only SbM but also note-based music. The lessons were proven to be beneficial for both teachers and students and should be introduced to more teachers, in order to give them the opportunity to use this experience in their classrooms. This can be achieved either through the implementation of these lessons in the music curriculum or through seminars, which would develop the teachers' learning and understanding of working with sounds rather than simply with notes in the music classroom.

The lessons also follow the structure of the New Music Curriculum (2010), so that they can contribute to the creation of a unified curriculum between primary and secondary education and help the modernisation of the content of the curriculum. The content of the lesson plans also enhances the student experience through all three key areas of the music curriculum: listening, composing and performing, teaching new techniques to the students and their teachers.

The SbM lessons promote inclusive education in the music classroom

The most important outcome of this research was the fact that the SbM lessons promoted inclusive education in the music classroom. The teachers identified that the SbM lessons attracted the NTM students, as they could participate in the lessons without the “traditional/classical” skills of reading, writing or performing notes. Students with learning disabilities were also able to understand and contribute to the lesson in their own ways either by identifying different sounds, choosing them or performing with them. SbM proved to be closer to their abilities than note-based music. The teachers agreed that the range of activities implemented throughout the SbM lessons and the different difficulty levels of each activity allowed students to engage with the lesson and actually learn from it without feeling left out.

Recommendations:

The New Music Curriculum (2010) supports inclusive education, but students, who do not have the “classical music” skills to participate in the music lesson, are left aside. It is important for the revised music curriculum to include lessons that engage these students, enhancing their abilities and promoting their learning in an inclusive environment. Lessons using sounds can provide this and help the NTM students engage more with the music lesson. The SbM lessons demonstrated that this is possible and that the material provided was accessible, understandable and appropriate for a wide range of age and abilities. It is important to help students find their own musical identity either through notes or sounds.

Lack of appropriate equipment to support SbM in schools

The research indicated that there is a lack of appropriate equipment in schools that could promote the teaching of SbM in the music classrooms. This affects the teaching of SbM, especially of the lessons involved with ICT. It was suggested by the teachers that with the appropriate equipment and support, they are willing to teach SbM again in the future.

Recommendations:

The research suggests that, in order to promote innovation in the music classroom as well as the use of music technologies, the MoEC should equip schools with the appropriate equipment. This equipment should include both hardware and software, which would allow teachers to explore the potentials of music technology and sound, thus promoting the teaching of SbM. There are different kinds of software for this purpose, which are specifically developed for the pedagogy of SbM, such as the “Composing with Sounds” software, which is going to be part of the EARS II website (see p.61)

Need for in-service teachers’ training to close the knowledge gap between teachers and support the teaching of SbM

From the beginning of the research, it became clear that teachers have received different kinds of training. This was as a result of the non-compulsory character of the training seminars offered by the MoEC, which affected the teacher’s music background and preferences (see p. 28). The lack of consistent training has created gaps in teachers’ subject knowledge as well as in their CPD. This also affected their choices of teaching material as well as their confidence in teaching new and innovative lessons, especially using music technology (see p.33). It was apparent from the case studies that this gap was a barrier in choosing SbM lesson plans as potential lessons for the music classroom, especially the ones utilising ICT. Nonetheless, at the end of the lessons all teachers agreed that SbM lessons are very beneficial for the students and should be taught in the music classroom, but in order for this to happen more training was required.

Recommendations:

The MoEC particularly emphasises the need for the use of technologies for enhancing teaching and learning in the music classroom. However, this research suggests that more in-service training is necessary in order to achieve this. With the proper training, teachers will feel confident to teach innovative lessons, including SbM, and any concerns relating to educational change and innovative material will be minimised (see p.55).

Teachers' concerns in relation to time, confidence, and teaching priorities influence the choice of SbM as a potential lesson

Teachers' concerns as discussed by Fullan (2005b) can be observed in educational change, as well as during the implementation of innovative material (see p.55). As it was underlined earlier, proper training can help in the elimination of teachers' concerns, such as lack of confidence due to lack of skills.

However, there are other issues that can affect the implementation of the SbM lessons. It was seen that teachers faced a dilemma when choosing their teaching material, usually relating to the time available to cover the curriculum. Time issues primarily emerge, especially in secondary education, when teachers need to complete a specific curriculum within a specific time frame, which allows little space for innovative material to be explored (see p.55). Moreover, teachers, when implementing innovative material, are worried about the benefits of such an implementation, and usually do not have the time to take such risks (see p.55). Now that the material is tested and it is undoubtedly beneficial for students, teachers should not have this fear of implementing SbM in their classrooms.

Recommendations:

As already recognised, the curriculum is a document open to interpretation, but teachers are still concerned with the time spent for new material outside the curriculum and are thus confining themselves to the curriculum document. The revised music curriculum needs to be more flexible, especially in relation to the teaching of new material. This will allow for experimentation and innovation as well as the promotion of SbM as part of the music lesson.

Multidimensional change necessary when implementing innovative material

The research identified the complexity of implementing innovation during an educational change in schools. The results of the research reveal a connection between the factors identified above. Thus, the successful implementation of innovative material lies in grasping the multidimensional nature of the change.

The results of the implementation of the SbM lessons in schools are considered highly beneficial, particularly with reference to the students. However, there is a need to understand the issues related to the other factors that need to support these lessons, such as: the technology equipment, CPD of the teachers, subject knowledge of the teachers and training. All these factors are relevant and need to be addressed in order for the innovation of SbM to be successfully embedded in educational change.

During the ERP, these issues can be resolved, as the MoEC is working hard towards this direction. Efforts to equip all schools with the necessary equipment, software and hardware, by offering training to the teachers in relation to the New Music Curriculum (2010) and by supporting innovation. Thus the SbM lesson plans can be introduced as part of the revised music curriculum either as a thematic unit or as external material presented to the teachers. The Teachers' Information Pack of the SbM (attached to the thesis) is already tested and successfully implemented in schools of Cyprus, which means that it can be incorporated in the curriculum or it can be used as an external material.

7.3. Contribution to Knowledge:

The research attempted to create appropriate SbM lesson plans that could be implemented in state public schools in Cyprus. The outcomes of this research revealed that the material presented to the teachers and students was appropriate and structured in a clear way that was possible to be delivered by teachers with no-prior knowledge of SbM. This is the first research taking place in Cyprus, investigating the introduction and implementation of SbM as part of the music curriculum, and the positive results of the research support its implementation in all schools. The SbM curriculum was created and tested in schools with different types of teachers, school equipment and students' levels of accomplishment. It was revealed that the SbM lessons can be successfully implemented in any music classroom, once the issues identified in

the previous section are resolved, and can be very beneficial for both students and teachers.

Burnard (2007) in one of her most influential articles on creativity and technologies expressed her dissatisfaction on the lack of resources of research that identify in practice how music education can move beyond “restrictive pedagogic ideologies” (2007:47). She supports that there is a need for research that identifies the resources used for creative teaching and the learning strategies used for using technology creatively. That is exactly what this research attempts to do by presenting the Teacher’s Information Pack, including all the theories, activities and equipment used within this research. This educational pack identifies the resources used for the teaching and learning of SbM and provides a guideline for others who wish to implement innovative music in their music classrooms.

Another important element of this research lies in the fact that the researcher has created a set of lesson plans based on SbM that can be presented in *different educational settings*. Although the Teacher’s Information Pack was created based on the CES, it can also be used in different educational contexts. It includes all the theories that are used in the lessons, along with specific activities and revision material. It is presented in English so that a wider public can access this material. Through these lesson plans, SbM can be promoted to a wider public through teaching in different settings, making SbM more accessible.

The research can be used as an example of how to implement SbM in Higher Education as well as for music lessons outside the school environment. Teachers, lecturers or anyone, who is interested in music education, can follow either the exercises and activities presented in the Teacher’s Information Pack or can create their own through the theories, strategies and techniques presented in Chapter 4.

More specifically, the importance of the SbM lessons for the MoEC lies in the fact that these lessons promote the aims, targets and objectives of the New Music Curriculum (2010), as presented to the music teachers. These objectives can be found in other music curriculums of different educational contexts hence teachers of different countries can use the SbM lessons. In more detail, the main targets of the New Music Curriculum(2010) between the 1st and 4th Grades as described in Chapter 2 (see p.29) meet the outcomes of the SbM lesson in relation to:

- *Development of active listening skills*

The basic activities used in the SbM lesson plans particularly focus on the development of active listening skills through the use of SbM ideas, such as the soundwalk. The implemented lessons also gave emphasis to the development of 'aural awareness', which directly connects with the development of active listening skills.

- *Development of improvisation and composition skills*

The creative activities of the SbM lesson plans, using the sounds from objects, particularly involved improvisation and a range of compositional skills. The new ideas of SbM allowed students to develop their compositional skills through improvisation and experimentation with the 'Audacity' software in manipulating and creating the SbM compositions. Students also developed their understanding of sound in relation to music material.

- *Acquire and enhance positive attitudes towards listening, performing and composing*

The tasks used within the SbM lessons had positive results, as all students, including the non-participant ones, enjoyed the lessons. Thus, it was observed and supported by the secondary students' evaluations that many students had positive attitude towards listening, and especially towards composing with sounds. In relation to performing, there were performing tasks, but, because of the limited time available, the teachers could not elaborate and give feedback for the performances. This is a result of the time issues discussed above, but it can be avoided with the proper guidance of the teachers.

- *Develop their individual musical skills*

Although not many teachers commented on the musical benefits of the students from the SbM lessons, it was obvious that the interaction with new musical ideas and techniques improved the students' musical skills. Students realised that all sounds could be possible musical material, and this is a big step forward, moving away from "traditional" Western music. It was important for the students to realise that notational music is not the only music that they interact with, and a number of secondary students in their evaluation questionnaires commented on this as being "something new".

- *Connect music to other subjects of the curriculum*

It was noticeable since the first case study that SbM could offer cross-curriculum connections, especially with themes about ecology and sound.

- *Use music to develop a collaborative spirit, responsibility, discipline and communication*

The SbM lessons offered many benefits to the students, promoted collaboration and communication in the music classroom, especially when students were working in groups. Teachers particularly commented on these educational benefits of the SbM lessons in all case studies. Regarding non-participant students, the teachers identified that they were more disciplined and focused, taking part in all tasks and activities. SbM lessons can be a way to attract the non-participant students, and engage them in the experience of music learning.

- *Be introduced to, familiarise themselves with and use contemporary technology in aspects of music*

This corresponds to one of the most important outcomes of this research. The use of technology and ICT in relation to SbM was able not only to introduce and familiarise students with technologies in relation to SbM, but also to engage them in the learning experience, using ideas and techniques of this music through technologies.

- *Use of materials and means for developing techniques and skills through investigating sound, use of voice and use of instruments*

In relation to this objective of the New Music Curriculum (2010), the SbM lessons fully support the development of techniques and skills through the exploration of sound. Although SbM lessons could use voice and instruments as a source of sounds materials, these were not explored in depth in this research, thus future research can focus on these. This research gave emphasis on students' understanding that any sound can be used as a musical material. Additionally, it aimed to give a basic knowledge to students and teachers on techniques of recording, manipulation and experimentation of these sounds through musical software, such as 'Audacity'. These basic ideas are important for teaching and learning SbM and in order for students and teachers to further develop their skills and techniques.

- *Expression of emotions, ideas, thoughts and solutions to musical problems through creation and musical planning, communication and musical presentation*

The creative tasks, following the diagram of “planning objectives” as described by Fautley and Savage (2007), allowed for the creation of musical problems. An example of these problems was the creation of sound-stories relating to the objects the students brought from home. This activity required critical thinking from the students relating to the choice of sounds. It also aimed at an informed musical planning, regarding the queue of the sounds and their performance in order to be recorded. Additionally, the exercise required communication and collaboration between group members before presenting their sound composition in front of the classroom and recording it.

All the above support the aims of the New Music Curriculum (2010) and indicate that the SbM lessons implemented in the case studies can be a beneficial addition to the music curriculum of Cyprus. The following section identifies possible future research based on the findings of this research project.

7.4. Future research

The research identified areas that could be further researched in the future.

Detailed SbM composition

It was identified that time issues did not allow for an in-depth explanation and exploration of techniques of recording or sound manipulation. Moreover, these issues did not allow a more developed process in relation to SbM composition. Thus, future research can focus only on SbM composition giving more insights on the students’ perspectives and thoughts about this music.

Exploration of synthesised sounds

This research showed that students can understand how sounds can be used as musical material, but time issues did not allow for exploration beyond the use of real-world sounds, and in the area of synthesised sounds. Future research can focus on a detailed analysis and exploration of synthesised sounds in order for students to fully understand the potentials of music technology and use these sounds in their own SbM compositions.

Experimentation with live performance and space

The researcher at the beginning aimed at an introduction of performance techniques to the students, but there was not enough time and no equipment available in the schools to allow this. Thus, future research can focus on exploring this area of performance of SbM, which is still unexplored and could possibly offer many benefits to the students and different perspectives on SbM performance.

SbM composition for videos

Future research can explore the possibilities of SbM to be composed for video. This requires the appropriate equipment, which might not be available in public schools of Cyprus, but it might be available in private schools.

SbM in special-education schools

The inclusive nature of the SbM lessons indicated that this research can be used to approach students with learning disabilities as well as students with special educational needs. It will be a huge step to implement SbM lessons in special-education schools, as this will offer an insight into the potentials of teaching SbM to students with different needs.

7.5. Closing statement

This research aimed at identifying the potential of implementing SbM in the music classrooms of Cyprus. It was showed that SbM deserves a place in the music curriculum of Cyprus and can benefit both teachers and students in relation to music, education and technology. The implementation of the lessons was successful, irrespective of any prior subject knowledge of the teachers. It is in line with the aims and objectives of the curriculum and promotes inclusive education and multi-level classroom structure. Both teachers and students had a positive attitude towards the implemented curriculum and the hope is now that SbM can be implemented consistently (in some form) in Cyprus and, ideally, elsewhere. The Teachers' Information Pack will be presented to the appropriate department of the MoEC for evaluation and, if successful, it will be distributed to music teachers working within the CES. Moreover, the Teachers' Information Pack has already been presented unofficially to editing members of the MoEC and has been found appropriate for consideration as a printing material of the Ministry.

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Music Apps Learn Teach: [Accessed 2013]

<http://musicappsforlearning.weebly.com/index.html>

Organising Sounds: [Accessed 2013] www.organisingsounds.com

Pedagogical Institute of Cyprus: [Accessed 2013]

<http://www.pi.ac.cy/pi/index.php?lang=el>

Positive Soundscapes: [Accessed 2012] <http://www.positivesoundscapes.org>

Appendices

Appendix A: Problems of the Current State of the Cypriot Education System

The issues identified during the Evaluation Project related to:

- 1) **the structure and organisation of the Ministry of Education and Culture**, as mentioned in the Evaluation Report, is that “the administrative system of governing and monitoring the MoEC remains strictly centralised, bureaucratic and inflexible” (Evaluation Report: 70). The power of taking part of any local authorities, school units or educators etc. is limited, where the cooperation and conversation between the different departments of the Ministry is inexistent. There is no structure and coordination between the services, departments and institutes of the Ministry.
- 2) **the structure and organisation of the CES**, the mandatory “nine-year education”, did not work as intended; it did not follow a unified philosophy and educational policy of teaching curriculum, targets, teaching methodology and evaluation of students. This was the result of the two different departments of the MoEC (Department of Primary Education and Department of Secondary Education) that were responsible for designing the teaching curriculum, targets, teaching methodologies and evaluation of students. As mentioned before, due to the lack of communication between the departments, the “nine-year” unified education became a “six” and a “three”-year education. This transition between the Primary and the Secondary school created a gap of adaptation for the students. The lack of a unified Department or Authority in the MoEC created more problems than expected (MoEC, 2001: 63).
- 3) **the curriculum, Schooling Knowledge/Content and Pedagogical-Teaching Procedures** are conservative mechanisms and their structure is outdated. Many of the ideas of the nine-year curriculum are modern and support the philosophy of the European Union. However, they also support the development of strong feelings towards the Greek Nation, which contrasts with 1) the inclusion of the whole Cypriot Nation in the European Union, not only of the Greek-Cypriot side, 2) the multicultural composition of the Cypriot students and, 3) the perspective for

unification of the two sides, Greek-Cypriot and Turkish-Cypriot (Evaluation Report).

The Evaluation Report also refers to the attempt of the MoEC to modernise the context of the curriculum and the teaching schedule without any distinctive positive results. The main reason is that the changes were not holistically incorporated in the educational system of Cyprus. (Evaluation Report: 83). Thus, the aims and targets of the Cypriot curriculum must change in order to modernise the system and support a General Education of a democratic school.

Moreover, the pedagogical-teaching procedures used, are “mechanical” (Ibid: 86). Teachers teach the curriculum in order students to learn it by heart, aiming only to pass the tests throughout the year or the exams at the end of the academic year. These procedures are opposite with the aims and targets of the educational system, but society continues to support the educational system, measuring academic achievement. This leads to a minimum attempt to support critical thinking in the classroom.

4) multicultural education and the limited knowledge of the teachers to support students that their first language is not Greek. “During the last few years, a growing number of immigrant students, coming from a large number of different countries, have enrolled in Public Schools. About 8.8% of the pupils attending Public Schools do not speak Greek as their mother language” (MoEC, 2008: 23). The teachers realise the danger that students with different cultural background might stay behind in their lessons and/or develop psychological problems because of the ignorance of their cultural uniqueness. Teachers are usually concerned about their competence to help these children and believe that a multicultural education will be the answer to the problem (ibid).

5) higher education and the fact that there are only 3 public universities in Cyprus and many private universities that are profitable. The public universities are: University of Cyprus, Open University of Cyprus and the Technological University of Cyprus. As private universities are really expensive, most times students pursue a position in the public universities. However, due to the limited number of positions available in relation to the large number of candidates for the public universities, competition is very stiff. This creates great anxiety to the students, who have to undertake exams in order to get accepted in the public universities, and this in turn increases the phenomenon of “parapaideia” (private afternoon lessons). Moreover,

many educators pursue part-time master degrees either in the University of Cyprus or other Universities abroad, while at the same time continue teaching in schools. This is considered problematic towards both directions, as they cannot concentrate on one or the other with the appropriate time and effort.

6) school units and educators' work are problematic in particular in the area of evaluation of the educator. The evaluation of an educator's work is the responsibility of inspectors. The issue is that inspectors, who are called to evaluate the educator's work, are responsible for a specific subject area, but may not possess a master's degree but only a master's training duration of one academic year. In other occasions, they do not possess a teaching qualification in the subject area but only a pedagogical knowledge of a relevant subject area. Their evaluation is based on only their observations of the teaching of the educator in the classroom twice a year. This kind of evaluation is out-dated and has not changed since 1976.

Even though the basic responsibility of the inspector is to inspect, guide and evaluate the teaching staff, the MoEC has assigned many other responsibilities to the inspectors, which leave no time for guiding the educators.

The most problematic area, though, is the promotion of educators into Directors or Inspectors. The evaluation criteria are clear, but they are usually overlooked because of the years of service of the educator who is usually promoted to a Director and later to Inspector. This system is unfair as worthwhile educators can be overlooked for the positions of Director and Inspector, only on the basis of their years of service. This problematic system also affects the issue of educators' permanency in schools and for their system promotion, which is not based on their competencies but their date of birth (Evaluation Report: 91).

7) teacher training and the importance of the quality of training, teachers should receive. Teacher Training is as crucial as the education of the students itself. It is the responsibility of the teachers to guide students in becoming democratic citizens of a multicultural community, and if the teachers are not good and democratic, then the system fails.

The training of a primary and a secondary teacher is different in many aspects. The most important difference is the "all mighty" primary teacher and the

specialised secondary teacher. The primary teacher is trained in general education, where a secondary teacher is trained in a specific subject area. A primary teacher in Cyprus is “able” to teach any subject of the primary education curriculum, without having a specialised training on it, for example Music, Arts, Gymnastics and Foreign Languages. This system leads to the creation of primary teachers that might know only the basics, and are often not competent in the artistic and foreign languages subjects.

A secondary teacher does not face this problem of general education, because of his specialised subject training, but lacks in pedagogical training. In Cyprus, from 1960 until the foundation of the PI in 1973, the only qualification required for a secondary teacher’s job was a degree in a subject area included in the curriculum. Most of the secondary teachers had no pedagogical training at all.

Thus in 1988 the legislation changed and secondary teachers had to attend training seminars from the PI and obtain a pedagogical training diploma. But even then, they were not attending the training seminars until 2000 when the law changed again and the PI had the full responsibility with the help of the University of Cyprus to train the secondary teachers to be. The training programme from the PI lasts seven months, and includes 108 hours of general psychological and pedagogical training, 108 hours of specialised are subjects, 100 hours of teaching observations and 50 hours of teaching.

The Evaluation Board, however, concludes that the teacher training did not have the positive results expected, because the training programme is not sufficient and there are still hundreds of secondary teachers without any pedagogical training. Another problematic area that links to teachers’ training is the lack of knowledge in order to teach individuals with special needs. Inclusive education is problematic if there is not the necessary equipment installed in the classrooms and moreover if the teachers do not know how to correspond, help and guide the students with special education needs (MoEC, 2001: 82).

Appendix B: European Union Attributes

Due to joining the European Union, the Cypriot society needed to align with the terms of **Globalisation, Knowledge Society** as well as **Learning Society** and **Knowledge-based Economy**⁷, which in turn challenged Cyprus for reconstruction, reformation and modernisation. The CES was one of the main areas in need for reformation. Once more education is considered the greatest weapon for social and economic renaissance.

The European identity and attributes of the European citizen or “**Homo Europaeus**” (Evaluation Report, 2004: 39) need an education which supports the development of ideas and critical thinking of an active student. Major emphasis is placed on lifelong learning and development of ICT (Information and Communication Technologies) skills as well as the cultivation of feelings of mutual understanding, appreciation and cultural awareness of the different social groups, in order to be able to develop the appropriate respect for diversity and cultural differences of the European societies. These “key competencies”, “skills”, “values” and “views” are considered necessary in order to support and develop the needs for the **Europe of Knowledge** (ibid: 29).

In this holistic attempt for change in education, many inspirational papers were written, such as the White Paper “Teaching and Learning: Towards a Society of Knowledge” (1995). Acquiring a wide range of knowledge through a wide and flexible education, with the use of ICT skills and individual development of the personality of the citizens throughout his/hers cultural heritage and the reshaping of citizens, is considered very important. Critical thinking, “Learning how to learn” and having citizenship competencies (responsibility and acceptance of the difference) are also considered significant.

According to the Bangemann Report entitled “Europe and the Global Information Society: Recommendations to the European Council” (1994), it was suggested and targeted that not only students need to acquire new skills but also the educators. An educator needs upgrading his/hers initial training/education in order to become more professional. He/She needs upgrading in cognitive areas of teaching/sciences of knowledge, in order to hold the fight against deskilling and de-professionalisation.

⁷ Globalisation is a term used usually to express economic power whereas Knowledge Society is being used in order to understand, explain, support or judge, major important changes in the global system and human life.

Appendix C: Thematic Units of the New Music Curriculum (2010)

1 st year of Secondary School:	Rhythm, sound and colour “Weave” music “Weave” more music I travel with music I dance with music Project on "The Water"
2 nd year of Secondary School:	In African rhythms European Standards Music for Dance Exotic melodic improvisations The tour of Greece
3 rd year of Secondary School:	Project "We are on air" Greek Musical Stories In the neighbourhoods of the Greek Song From Gospel to Rock.
1 st year of Upper Secondary:	Greek Music European Classical Music Trends in the 20th century Music of Cyprus

(Υπουργείο Παιδείας και Πολιτισμού Κύπρου, 2011:9)

Appendix D: Terminology in Greek

Sound-based music: Μουσική Βασισμένη σε Ήχους

Note-based music: Μουσική Βασισμένη σε Νότες

Aural Awareness: Ηχητική Συνειδητοποίηση

Active listening: Ενεργητική Ακρόαση

Passive listening: Παθητική Ακρόαση

Soundwalk: Ηχητικός περίπατος

Acoustic ecology: Ακουστική Οικολογία

Soundscape: Ηχοτοπίο

Live electronics: Ζωντανή εκτέλεση μουσικής με ηλεκτρονικά όργανα

Reduced Listening: Ελαχιστοποιημένη Ακρόαση

Effects: Ηχητικά Εφέ

Reverb: Αντήχηση

Echo: Ηχώ

Filter: Φίλτρο ήχου

Loop: Βρόχος/ Λούπα

Mute: Σίγαση

Solo: Μονοφωνία/ Σόλο

Copy/cut/paste: Αντιγραφή, Αποκοπή, Επικόλληση

Reverse: Αντιστροφή

Οδηγίες για το Audacity

1. Κατεβάστε το λογισμικό από τη σελίδα <http://audacity.sourceforge.net/>
(διαλέγοντας ποιο ταιριάζει στον Η/Υ σας)
2. Ανοίξτε το λογισμικό πατώντας 2 φορές στο εικονίδιο του Audacity
3. Για να εισάγετε ήχο στο λογισμικό επιλέγετε, File , Import, Audio
4. Διαλέξτε τον ήχο που θα εισάγετε και επιλέξτε open
5. Αν ο ήχος που θέλετε να εισάγετε βρίσκεται σε μορφή mp3, τότε θα εμφανιστεί ένα παράθυρο που μετρά τον χρόνο εισαγωγής και έπειτα θα δείτε την κυματομορφή του ήχου σας σε στέρεο ή μόνο κανάλι.
6. Αν ο ήχος σας δεν είναι σε μορφή mp3, τότε το λογισμικό μπορεί να σας ζητήσει να κατεβάσετε κάποιες βιβλιοθήκες (library) που υποστηρίζουν τη συγκεκριμένη μορφή ήχου όπως την FFmpeg. Ακολουθείστε τις οδηγίες που σας δίνει.
7. Για να επιλέξετε τον ήχο πατήστε στην κυματομορφή.
8. Για να επιλέξετε μέρος της κυματομορφής πατήστε από το σημείο που θέλετε να επιλέξετε μέχρι το σημείο που θέλετε έχοντας πατημένο το αριστερό ποντίκι.
9. Για να επεξεργαστείτε τον ήχο επιλέξτε τον ολόκληρο ή κάποιο μέρος του και πατήστε Edit. Εκεί θα βρείτε τις βασικές επεξεργασίες ήχου, όπως copy, cut, delete, paste.
10. Δοκιμάστε τα διάφορα ηχητικά εφέ που προσφέρει το λογισμικό επιλέγοντας Effect και κάποιο από τα περιεχόμενα, όπως Echo, Invert, Fade in, Fade out, επιλέγοντας πάλι ολόκληρο ή μέρος του ήχου που θέλετε να επηρεάσετε.
11. Για να σώσετε (save) τις αλλαγές που κάνετε στον ήχο σας μπορείτε να σώσετε ολόκληρο το project στο Audacity επιλέγοντας File, Save project as, όπου δίνετε τη δική σας ονομασία σε αυτό που δουλεύατε.
12. Για να εξάγετε τον καινούργιο ήχο ή σύνθεση, επιλέγετε File, Export. Επιλέγετε το όνομα, την περιοχή που θα το φυλάξετε και τη μορφή (mp3) και τότε ο ήχος σας εξάγεται από το Audacity και γίνεται ένας ανεξάρτητος ήχος που μπορεί να χρησιμοποιηθεί και σε άλλα προγράμματα ή ξανά στο Audacity.
13. Υπάρχει περίπτωση το λογισμικό να σας ζητήσει και σε αυτή την περίπτωση μια ειδική βιβλιοθήκη (library) όπως είναι η Lame Library για να εξάγει κάποια μορφή, τότε ακολουθείστε τις οδηγίες που σας δίνει.

Appendix F: Confirmation Letter from MoEC for Conducting the Study in Primary Schools



ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ
ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ

ΔΙΕΥΘΥΝΣΗ
ΔΗΜΟΤΙΚΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

Αρ. Φακ.: 7.19.46.6/28
Αρ. Τηλ.: 22800661
Αρ. Φαξ: 22428277
E-mail: dde@moec.gov.cy

25 Οκτωβρίου, 2010

Κυρία Νάσια Θεράποντος
Υμηττού 2, Πλατύ
2113 Αγλαντζιά

Θέμα: Άδεια για διεξαγωγή έρευνας με μαθητές τριών δημοτικών σχολείων της επαρχίας Λευκωσίας

Αγαπητή κυρία Θεράποντος,

Έχω οδηγίες να αναφερθώ στη σχετική με το πιο πάνω θέμα αίτησή σας προς το Κέντρο Εκπαιδευτικής Έρευνας και Αξιολόγησης, που υποβλήθηκε στις 24 Σεπτεμβρίου 2010, και να σας πληροφορήσω ότι εγκρίνεται το αίτημά σας για διεξαγωγή έρευνας με μαθητές των τριών δημοτικών σχολείων της επαρχίας Λευκωσίας που αναφέρονται στην αίτησή σας, με θέμα «Μουσική τεχνολογία και η μουσική εκπαίδευση. Τα εκπαιδευτικά ωφελήματα της προσαρμογής ηλεκτροακουστικής μουσικής και ηχητικής βασιζόμενης μουσικής στην Κύπρο», την παρούσα σχολική χρονιά 2010-2011, νοουμένου ότι θα ληφθούν υπόψη οι παρατηρήσεις του Κέντρου Εκπαιδευτικής Έρευνας και Αξιολόγησης, οι οποίες σας αποστέλλονται συνημμένα για δική σας ενημέρωση.

2. Νοείται, βέβαια, ότι πρέπει να εξασφαλιστεί η άδεια των διευθυντών/διευθυντριών των σχολείων, εκ των προτέρων, ώστε να ληφθούν όλα τα απαραίτητα μέτρα για να μην επηρεαστεί η ομαλή λειτουργία τους. Επίσης, θα πρέπει να έχετε τη συγκατάθεση των εκπαιδευτικών, στην τάξη των οποίων θα μπειτε για παρατήρηση. Η έρευνα θα πρέπει να διεξαχθεί με ιδιαίτερα προσεγμένο τρόπο, ώστε να μη θίγεται το έργο των εκπαιδευτικών, το σχολικό περιβάλλον ή οι οικογένειες των μαθητών και όλες οι δραστηριότητες που θα αναπτυχθούν πρέπει να εμπίπτουν μέσα στα πλαίσια που καθορίζονται από το Αναλυτικό Πρόγραμμα. Η έρευνα θα διεξαχθεί νοουμένου ότι η απώλεια του διδακτικού χρόνου των μαθητών θα περιοριστεί στον ελάχιστο δυνατό βαθμό, ενώ για τη συμμετοχή τους χρειάζεται η **γραφτή** συγκατάθεση των γονιών τους. Οι γονείς πρέπει να γνωρίζουν όλες τις σχετικές λεπτομέρειες για τη διεξαγωγή της έρευνας, καθώς και τα στάδια μέσα από τα οποία θα εξελιχθεί. Σημειώνεται, επίσης, ότι τα πορίσματά σας κρίνεται απαραίτητο να είναι ανώνυμα και οι πληροφορίες που θα συλλέξετε να τηρηθούν απόλυτα εμπιστευτικές και αποκλειστικά και μόνο για το σκοπό της έρευνας.



Υπουργείο Παιδείας και Πολιτισμού, 1434 Λευκωσία
Τηλ.: 22800600 Φαξ: 22428277 Ιστοσελίδα: <http://www.moec.gov.cy>

3. Η παρούσα έγκριση παραχωρείται με την προϋπόθεση ότι τα πορίσματα της εργασίας, θα κοινοποιηθούν μόλις αυτή ολοκληρωθεί, στη Διεύθυνση Δημοτικής Εκπαίδευσης για σχετική μελέτη και κατάλληλη αξιοποίηση.

Με εκτίμηση,



(Στέλιος Στυλιανού)
για Γενική Διευθύντρια

Κοιν.: Π.Λ.Ε. Λευκωσίας
Επαρχιακό Γραφείο Παιδείας
: Ε.Δ.Ε. Μουσικής
Επαρχιακό Γραφείο Παιδείας Λευκωσίας

Appendix G: Confirmation Letter from MoEC for Conducting the Study in Secondary Schools



ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ
ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ

ΔΙΕΥΘΥΝΣΗ
ΜΕΣΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

Αρ. Φακ.: 7.19.46.7/16
Αρ. Τηλ.: 22800630/631
Αρ. Φαξ: 22428268
E-mail: circularsec@schools.ac.cy

18 Οκτωβρίου 2010

Κυρία Νάσια Θεράπποντος
Υμηττού 2
2113 Αγλαντζιά
Λευκωσία

Θέμα: Παραχώρηση άδειας για διεξαγωγή έρευνας

Αναφορικά με τη σχετική με το πιο πάνω θέμα αίτησή σας στο Κέντρο Εκπαιδευτικής Έρευνας και Αξιολόγησης, ημερομηνίας 24 Σεπτεμβρίου 2010, πληροφορείστε ότι το αίτημά σας για διεξαγωγή έρευνας, με θέμα «Μουσική τεχνολογία και η μουσική εκπαίδευση - Τα εκπαιδευτικά ωφελήματα της προσαρμογής ηλεκτροακουστικής μουσικής και ηχητικής βασιζόμενης μουσικής στην Κύπρο», στα πλαίσια έρευνας για την απόκτηση διδακτορικού τίτλου σπουδών στο Πανεπιστήμιο De Montfort Leicester, εγκρίνεται. Νοείται ότι θα λάβετε υπόψη τις εισηγήσεις του Κέντρου Εκπαιδευτικής Έρευνας και Αξιολόγησης οι οποίες επισυνάπτονται, και θα τηρήσετε τις ακόλουθες προϋποθέσεις:

1. θα εξασφαλίσετε τη συγκατάθεση των Διευθυντών των σχολείων τα οποία θα συμμετάσχουν στην έρευνα,
2. η συμμετοχή των εκπαιδευτικών θα είναι προαιρετική,
3. θα εξασφαλίσετε τη συγκατάθεση των εκπαιδευτικών οι οποίοι θα συμμετάσχουν στην έρευνα,
4. δε θα επηρεασθεί ο διδακτικός χρόνος και η ομαλή λειτουργία των σχολείων για τη διεξαγωγή της έρευνας,
5. θα χειριστείτε τα στοιχεία των εκπαιδευτικών με τέτοιο τρόπο, ώστε να διασφαλιστεί πλήρως η ανωνυμία τους, και τέλος,
6. για τη χρήση μαγνητοφώνου ή οποιασδήποτε άλλης μεθόδου για την καταγραφή των συνεντεύξεων θα πρέπει πρώτα να πάρετε άδεια από τους εμπλεκόμενους οι οποίοι θα πάρουν μέρος στη συνέντευξη, και τέλος,
7. τα αποτελέσματα της έρευνας θα κοινοποιηθούν στο Υπουργείο Παιδείας και Πολιτισμού.

Ευχόμαστε καλή επιτυχία στους ερευνητικούς σας σκοπούς.

α.α.
Δρ Ζήνα Πουλλή
Διευθύντρια Μέσης Εκπαίδευσης

BK

Υπουργείο Παιδείας και Πολιτισμού 1434 Λευκωσία
Τηλ: 22 800 600 fax: 22 428268 website: www.moec.gov.cy

PARTICIPANT INFORMATION SHEET

The area of music technology used in the Cypriot music classroom will be under investigation with an addition of new electroacoustic music (also known as sound-based music) techniques to research the effectiveness and contribution to students and abilities of teachers.

You are invited to participate in a qualitative and quantitative research project which forms a part of my PhD in Music, Technology and Innovation at De Montfort University. My investigation is seeking to complete a new Music Curriculum for the Cypriot Education System, which could be easily applicable for other countries as well.

The project is being carried out in accordance with the ethical guidelines of the British Education Research Association and under the supervision of the Education and Music, Technology and Innovation staff at De Montfort University.

The title of the project is:

New technologies and the secondary curriculum: the educational benefits of the introduction of sound-based music in Cyprus

I have researched the theoretical background of music education and technology through desktop analysis and a literature review of previous research in this area. I am now seeking to gather observation data as well as data from questionnaires to address my research questions, namely:

Is electroacoustic music (sound-based) approachable and appreciated by young students of 11-14 year old?

I would like to structure my research (observation/ questionnaires) around the following general areas:

- Introduction of electroacoustic/sound-based music techniques in secondary schools.
- Appreciation of these techniques by students
- Ability of teachers to teach this subject

The data gathered will be stored securely at DMU. Data collected will be treated in the strictest confidence and will only be reported in anonymised form. Participation in the project is completely voluntary and participants are at liberty to withdraw at any time without prejudice or negative consequences.

If you require further information please contact:

Research investigator: Nasia Therapontos, (nasia_th@hotmail.com)

Research Supervisor: Prof. Leigh Landy

Chair of Ethics Committee: Prof. Simon Emmerson (semmerson@dmu.ac.uk)

PARTICIPANT CONSENT FORM

Project title: New Technologies and the Secondary Curriculum: The Educational Benefits of the Introduction of Sound-Based Music in Cyprus

Researcher's name: Nasia Therapontos

Supervisor's name: Prof. Leigh Landy

I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential. I understand that I will be digitally recorded during the interview.
- I understand that hard and electronic copies of the interviews will be stored by the researcher. Access will be limited to the researcher and supervisor.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Humanities Faculty Research Ethics Coordinator, De Montfort University, if I wish to make a complaint relating to my involvement in the research.

Signed (Research participant)

Print name **Date**

Contact details

Researcher: Nasia Therapontos (nasia_th@hotmail.com)

Supervisor: Prof. Leigh Landy (leigh.landy@googlemail.com)

Faculty Research Ethics Coordinator: Prof. Simon Emerson
(semmerson@dmu.ac.uk)

QUESTIONNAIRES:

APPENDIX I: SCHOOL'S PROFILE QUESTIONNAIRE

APPENDIX J: TEACHER'S PROFILE QUESTIONNAIRE

APPENDIX K: TEACHER'S BACKGROUND AND SbM KNOWLEDGE QUESTIONNAIRE

APPENDIX L: SECONDARY STUDENTS' EVALUATION QUESTIONNAIRES

APPENDIX M: RESPONDENT'S VALIDATION QUESTIONNAIRES

Appendix I: School's Profile questionnaire

1. School name:
2. Year of Establishment:
3. Type:
 - a. Rural
 - b. Urban
 - c. Public
 - d. Private
4. Number of students:
5. Number of music teachers:
6. Budget expenses for the music lesson :
7. Music classroom:
 - a. Yes
 - b. No
8. Music warehouse:
 - a. Yes
 - b. No
9. Performance Hall:
 - a. Yes
 - b. No

School's Profile questionnaire: **EXAMPLE**

1. School name: School C
2. Year of Establishment: 2006
3. Type:
 1. Rural
 - 2. Urban**
 3. Public
 - 4. Private**
4. Number of students: 275
5. Number of music teachers: 2
6. Budget expenses for the music lesson: €1200
7. Music classroom:
 - 1. Yes**
 2. No
8. Music warehouse:
 - 1. Yes**
 2. No
9. Performance Hall:
 - 1. Yes**
 2. No

Appendix J: Teacher's Profile questionnaire

1. Name
2. Primary/ Secondary school
3. Male/Female
4. **Age:** 20-30, 31-40, 41-50, 51-63
5. **Do you have a music degree?**
Yes/No

6. **Where did you finish your studies?**

7. **How long have you been teaching in schools?**

8. **Do you have access to professional development?** Yes/No

If YES what kind: (Please circle)

9. Music courses to keep you up to date with the knowledge of music
10. Music courses to keep you up to date with your teaching/ pedagogy
11. Music technology courses
12. Computer courses

13. **How do you stay informed with your subject of music?**

14. **From who: (select)**

15. Self taught
16. Students
17. Help from friends, family, neighbours
18. Help from colleagues, peers, teachers
19. Help from experts
20. Help from the MoEC

21. **From Where:**

22. Seminars
23. Articles
24. Workshops
25. Internet
26. Other

Teacher's Profile questionnaire: **EXAMPLE**

1. Name: EA
2. Primary/ **Secondary school F**
3. Male/ **Female**
4. Age: 20-30, 31-40, **41-50**, 51-63
5. **Do you have a music degree?**
Yes/No
6. **Where did you finish your studies?**

1994

7. **How long have you been teaching in schools?**

15 years

8. **Do you have access to professional development?** **Yes**/No

If YES what kind: (Please circle)

9. **Music courses to keep you up to date with the knowledge of music**
10. **Music courses to keep you up to date with your teaching/ pedagogy**

11. Music technology courses
12. Computer courses

13. **How do you stay informed with your subject of music?**

14. **From who: (select)**

15. **Self taught**

16. Students
17. Help from friends, family, neighbours

18. **Help from colleagues, peers, teachers**

19. **Help from experts**

20. **Help from the MoEC**

21. **From Where:**

22. **Seminars**

23. **Articles**

24. **Workshops**

25. **Internet**

26. Other

Appendix K: Teacher's background and SbM knowledge questionnaire

1. Name of teacher:
2. Name of school:
3. Please circle: State, private, rural, urban
4. **Do you have a specific music classroom for teaching?** Yes/ No
5. **How many students are allowed in the classroom for each teaching period?**

6. **Do you have any computers in the music classroom?** Yes/ No
7. If Yes how many?

8. **Can you use the computer lab of the school for teaching?** Yes/ No
9. Why is that?

10. **Do you have any recording equipment?** Yes/No
11. If Yes what kind and how many?

12. **Do you use any musical software?**
Yes/No

If Yes which ones? Please circle:

13. Audacity,
14. Pro Tools,
15. Logic,
16. Sibelius,
17. Finale,
18. Reason,
19. Cubase,
20. If not included please add:

21. Can you please describe what you teach involving music and technology to your students? More specifically what the students learn as music and technology and how they use it as a tool in the music classroom.

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“Sound-based music designates the art form in which the sound, that is, not the musical note, is its basic unit” Landy 2007

22. Do you have any knowledge of sound-based music?

To what extent:

- 23. Not at all
- 24. Very little
- 25. A little
- 26. A lot
- 27. A very great deal

28. Please circle the appropriate if applicable:

- 29. Through Listening
- 30. Composing
- 31. Teaching
- 32. Theory
- 33. None of the above

34. Would you be willing to teach electronic, electroacoustic and sound-based music?

To what extent:

- 35. Not at all
- 36. Very little
- 37. A little
- 38. A lot
- 39. A very great deal

40. Please explain your answer/ add comment:

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Teacher's background and SbM knowledge questionnaire: **EXAMPLE**

1. Name of teacher: NN
2. Name of school: School E
3. Please circle: **State**, private, rural, **urban**
4. **Do you have a specific music classroom for teaching?** **Yes**/ No
5. **How many students are allowed in the classroom for each teaching period?**

25 students

6. **Do you have any computers in the music classroom?** **Yes**/ No
7. If Yes how many?

One

8. **Can you use the computer lab of the school for teaching?** Yes/ **No**
9. Why is that?

Is only for the subject of ICT

10. **Do you have any recording equipment?** Yes/**No**
11. If Yes what kind and how many?

12. **Do you use any musical software?** **Yes**/No

If Yes which ones? Please circle:

13. Audacity,
14. Pro Tools,
15. Logic,
16. **Sibelius**,
17. **Finale**,
18. Reason,
19. **Cubase**,
20. If not included please add:

21. **Can you please describe what you teach involving music and technology to your students? More specifically what the students learn as music and technology and how they use it as a tool in the music classroom.**

Analysis of sound waves in the computer after a recording.

Connections between notational software and scores (MIDI)

Editing Audio and MIDI

"Sound-based music designates the art form in which the sound, that is, not the musical note, is its basic unit" Landy 2007

22. Do you have any knowledge of sound-based music?

To what extent:

- 23. Not at all
- 24. Very little
- 25. A little**
- 26. A lot
- 27. A very great deal

Please circle the appropriate if applicable:

- 28. Through Listening
- 29. Composing
- 30. Teaching
- 31. Theory**
- 32. None of the above

33. Would you be willing in teaching electronic, electroacoustic and sound-based music?

To what extent:

- 34. Not at all
- 35. Very little
- 36. A little
- 37. A lot
- 38. A very great deal**

39. Please explain your answer/ add comment:

This is one of the contemporary approaches to music.

It can be used for a number of students with different levels of education and for students with disabilities

It uses technologies, ICT, VIDEO, SYNTH ...

Appendix L: Secondary Students' Evaluation Questionnaires

A) Level 1 secondary students

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5

- **Evaluate the activities from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5

- **Which activity was the most interesting? Why?**

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- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5

Secondary Students' Evaluation Questionnaires: **EXAMPLE**

Level 1 student (9), School D, 30/1/11

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5

- **Evaluate the activities from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5

- **Which activity was the most interesting? Why?**

The most interesting activity was the experimentation with sound, because in our groups we could create any sound we wanted. We all had our own sound for the recording.

- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5

B) Evaluation questionnaires for Level 2 secondary students:

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5
Lesson 4: Synthesised sound and image	1 2 3 4 5

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5
Video projection activities	1 2 3 4 5

- **Which activity was the most interesting? Why?**

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- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5
Synthesised sound	1 2 3 4 5

Secondary Students' Evaluation Questionnaires: **EXAMPLE**

Level 2 Student (5), School E, 27/1/11

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5
Lesson 4: Synthesised sound and image	1 2 3 4 5

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5
Video projection activities	1 2 3 4 5

- **Which activity was the most interesting? Why?**

The most interesting activity for me was the soundwalk, because we discovered sounds around us and learn how to pay attention to them.

- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5
Synthesised sound	1 2 3 4 5

C) Evaluation questionnaires for Level 3 secondary students:

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5
Lesson 4: Sound-based music	1 2 3 4 5

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5
Video projection activities	1 2 3 4 5

- **Which activity was the most interesting? Why?**

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- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5
Electronic music	1 2 3 4 5

Secondary Students' Evaluation Questionnaires: **EXAMPLE**

Level 3 Student (13), School F, 3/2/11

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Lesson 1: Acoustic Ecology	1 2 3 4 5
Lesson 2: Real world sounds in compositions	1 2 3 4 5
Lesson 3: Music technology	1 2 3 4 5
Lesson 4: Sound-based music	1 2 3 4 5

- **Evaluate how much you enjoyed each lesson from 1 to 5.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Soundwalk	1 2 3 4 5
Music listening exercises	1 2 3 4 5
Experimentation with sound	1 2 3 4 5
Recording	1 2 3 4 5
Composing with technologies/Sound manipulation	1 2 3 4 5
Video projection activities	1 2 3 4 5

- **Which activity was the most interesting? Why?**

The most interesting activity for me was the experimentation with sounds, because we could collaborate with our team and each one could say his/her own opinion and this gave as a great result for our recording.

- **Evaluate how much you would like to learn about each subject.**

1= None, 2= A little, 3= Moderate, 4= Much, 5= Very much

Sounds	1 2 3 4 5
Soundscape	1 2 3 4 5
Real-world sounds in compositions	1 2 3 4 5
Composition	1 2 3 4 5
Sound manipulation	1 2 3 4 5
Use of ICT as part of the music lesson	1 2 3 4 5
Recording	1 2 3 4 5
Electronic music	1 2 3 4 5

Appendix M: Respondent Validation Questionnaires

Thank you for taking part in the research. The data have been collected and the following questionnaire represents the findings. Please consider the findings and state whether you agree or disagree with the findings. Thank you again for your time.

School:
Name:
Date:

Please complete each question by ticking the box you most agree with.

1. PEDAGOGY: Sound-based music lessons can offer:

a. Educational benefits to the students i.e. communication skills, presentation skills ...

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

b. Technological benefits to the students i.e. use of ICT and music software

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

c. Musical benefits to the students i.e. new music ideas, enhance their musical creativity

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

d. Inclusive education in the classroom i.e. in mixed ability classrooms

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

e. Freedom to the students i.e. freedom to experiment, explore, discover

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

2. TEACHER'S BACKGROUND:

a. Teacher's background and university studies influence the use of sound-based music in the classroom.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

b. Teacher's confidence for teaching sound-based music is critical for its choice as part of the music lesson.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

3. TEACHER'S TRAINING AND PROFESSIONAL DEVELOPMENT:

a. Teacher's professional development in relation to sound-based music and the use of ICT in the music classroom is critical for teaching sound-based music.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

b. Teacher's training of music education influences their choice of curriculum and pedagogical tools i.e. stick to the safe methods and lessons.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

4. TECHNOLOGICAL EQUIPMENT: Computers and music software in the music classrooms

a. Access to available and working equipment, with the proper musical software is essential for the integration of sound-based music ideas and concepts in the music classroom.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

5. NATIONAL INITIATIVES: Government policy in relation to the music curriculum

a. Communication between the Ministry of Education and Culture of Cyprus and the music teachers is critical in promoting the teaching of sound-based music in schools i.e. training seminars, projects, and curriculum knowledge.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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Any comments:

Any general comments you would like to add?

Thank you for your time. If you have any queries regarding the research please contact: Nasia Therapontos email: nasia_th@hotmail.com

Respondent validation questionnaire: **EXAMPLE**

Thank you for taking part in the research. The data have been collected and the following questionnaire is representing the findings. Please consider the findings and state whether you agree or disagree with the findings. Thank you again for your time.

School: D
Name: EP
Date: 10/1/2012

Please complete each question by ticking the box you most agree with.

1. PEDAGOGY: Sound-based music lessons can offer:

a. Educational benefits to the students i.e. communication skills, presentation skills ...

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

Indeed, music cultivates the interest and the curiosity of the students, while developing their willingness to present their work.

b. Technological benefits to the students i.e. use of ICT and music software

Strongly disagree	Disagree	Undecided	Agree √	Strongly agree
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Any comments:

It pursues the students; need to be informed and to engage with new music software

c. Musical benefits to the students i.e. new music ideas, enhance their musical creativity

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

They find opportunities to be creative, through the experimentation with SbM and become familiar with new musical ideas

d. Inclusive education in the classroom i.e. in mixed ability classrooms

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

It allows to students with learning difficulties to be part of the lesson and be active, as well as create with their own way.

e. Freedom to the students i.e. freedom to experiment, explore, discover

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

The fact that there is no need to read notes, but they can experiment with sounds, it develops their sense of freedom, discovery and joy.

2. TEACHER'S BACKGROUND:

a. Teacher's background and university studies influence the use of sound-based music in the classroom.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

The experiences and the teacher's studies definitely influence and guide the teachers' abilities for someone to teach this music.

b. Teacher's confidence for teaching sound-based music is critical for its choice as part of the music lesson.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

There is a need for educational seminars relating to SbM, in order for the teacher to feel safe and comfortable in order to teach it to his/hers students.

3. TEACHER'S TRAINING AND PROFESSIONAL DEVELOPMENT:

a. Teacher's professional development in relation to sound-based music and the use of ICT in the music classroom is critical for teaching sound-based music.

Strongly disagree	Disagree	Undecided	Agree √	Strongly agree
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Any comments:

If a teacher is willing to experiment on his/her own with this music, he/she definitely can. But additional help and development, is definitely a significant help

b. Teacher's training of music education influences their choice of curriculum and pedagogical tools i.e. stick to the safe methods and lessons.

Strongly disagree	Disagree	Undecided	Agree √	Strongly agree
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Any comments:

This links to the above.

4. TECHNOLOGICAL EQUIPMENT: computers and music software in the music classrooms

a. Access to available and working equipment, with the proper musical software is essential for the integration of sound-based music ideas and concepts in the music classroom.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

This is understandable and necessary.

5. NATIONAL INITIATIVES: government policy in relation to the music curriculum

a. Communication between the Ministry of Education and Culture of Cyprus and the music teachers is critical in promoting the teaching of sound-based music in schools i.e. training seminars, projects, and curriculum knowledge.

Strongly disagree	Disagree	Undecided	Agree	Strongly agree √
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Any comments:

Of course, the right communication with the MoEC will give the right basis for the teaching of this music.

Any general comments you would like to add?

I believe that with the appropriate support, students' interaction with this music will be very positive, and with the right communication and training from the MoEC, there will be a good teaching of SbM in schools.

Thank you for your time. If you have any queries regarding the research please contact: Nasia Therapontos email: nasia_th@hotmail.com

INTERVIEWS:

APPENDIX N: INTERVIEW QUESTIONS- PRIMARY SCHOOL CASE STUDIES

APPENDIX O: INTERVIEW QUESTIONS- SECONDARY SCHOOL CASE STUDIES

Appendix N: Interview questions used after the implementation of each lesson plan in primary schools

1. Did you enjoy the new lesson?
2. What was the most interesting part of it?
3. What was the least interesting part of it?
4. What was easy to deliver and what was difficult?
5. Was there something that was not easy to understand either you or the students?
6. Did you need any additional help in order to deliver the lessons or the material provided to you was efficient?
7. Did you see positive reaction from your students or not?
8. Why do you think that happened?
9. Would you use it again in the future as part of your teaching?

Primary school teacher interview: **EXAMPLE**

School B, Lesson 2 (3rd visit), Teacher EK, 26/11/10

1. Did you enjoy the new lesson?

Very much, very much.

2. What was the most interesting part of it?

I believe the most interesting part of the lesson was when towards the end through analysing sounds the children comprehended what contemporary music and electroacoustic music means. Without my pursuing of this they concluded that ‘! Today’s music’, as they named it, uses these sounds in their compositions, etc.

3. What was the least interesting part of it?

I don’t feel there was something uninteresting this time in the lesson. I think when we started I wasn’t as stressed as during the first so I compensated for some gaps I had left behind in the first. I think I pressured them some more.

4. What was easy to deliver and what was difficult?

This time for some strange reason everything was quite easy and the kids helped as well. Many more responded and the definitions were reached without problems and hesitation.

5. Was there something that was not easy to understand either by you or the students?

No, things were even clearer.

6. Did you need any additional help in order to deliver the lessons or the material provided to you was efficient?

It was satisfactory, very satisfactory.

7. Did you see positive reactions from your students or not?

8. Why do you think that happened?

Very much, very much! They responded much more to the point where I had to interrupt them and get them back in order. Perhaps the fact that they already had an experience of this music etc. helped them, too, in the end.

9. Would you use this lesson in the future as part of your teaching?

Definitely.

Appendix O: Interview questions used after the implementation of each lesson plan in secondary schools

1. Did you enjoy the new lesson?
2. **Did you teach something similar in the past?**
3. What was the most interesting part of it?
4. What was the least interesting part of it?
5. What was easy to deliver and what was difficult?
6. Was there something that was not easy to understand either you or the students?
7. Did you need any additional help in order to deliver the lessons or the material provided to you was efficient?
8. Did you see positive reaction from your students or not?
9. Why do you think that happened?
10. **Did it attract students' attention?**
11. **The students that are usually not very active in participation in the classroom, how did they react to the new lesson?**
12. **The students that have learning disabilities, how did they react to the new lessons?**
13. **The students that do not speak the native language, how did they react to the new lessons?**
14. Would you use it again in the future as part of your teaching?
15. **In what chapter of the music curriculum do you think it could be used?**
16. **Could you use it as a curriculum project?**
17. **Does it offer effective teaching?**
18. **Do you believe that these lessons can promote students' creativity?**
19. **How would you use these lessons to promote students' music and technological abilities?**
20. **Do you support the recording of the performances of the students?**
21. **Do you believe that these lessons open the horizons of the students for new sounds in music?**
22. **How much time, you believe, this type of music deserves?**
23. **How much time are you willing to offer for this kind of music?**
24. **Why is that?**

Secondary school teacher interview: **EXAMPLE**

School D, Lesson 3, Teacher EP,

1. Did you enjoy the new lesson?

Very much and I hope to find the time to live this, more intense through my own participation

2. What was the most interesting part of it?

When the students themselves were choosing the parts of their sounds that they wanted to put in a line..

3. What was the least interesting part of it?

The opposite, today they were all well behaved in the lesson, all of them, because I think it made them an impression and they would like to be themselves in the position to use the software.

4. What would be easy to deliver and what difficult?

If I knew more things... but anyway not that easy with all those children at the same time.

a. Yes, they are many

5. Was there something that was not easy to understand either you or the students?

No, the instructions were very nicely given, simple, short and understandable.

a. Good!

6. Would you need any additional help in order to deliver the lesson, or the material provided to you would be efficient?

At some point on a personal note, I could be able to get more into the spirit, for me to be more... to have more skills, so that I can give clear instruction and not to be looking...(in the software)

a. Ok

7. If you were given simple written instructions, would you be able to teach it?

Yes, in mind that I would spend some time alone, to be able to remember things by heart... because the students can't You lose them when you stop and think before acting...

8. Did you see positive reaction from your students or not?

Very positive!!!

9. Why do you think that happened?

Because it is something new, something modern, something that is really close to them, having to do with computers, the new generation is always with these. I believe they will start trying it from today!!!

10. Did you teach anything similar in the past?

No

11. Did it attract students' attention?

Yes, yes! That's why they participated that intensely!

12. The students that are usually not very active in participation in the classroom, how did they react to the new lesson?

They didn't make any questions, but I could see in their eyes that they were watching carefully the new material.

13. The students that have learning disabilities, how did they react to the new lessons?

Those students were trying to understand as well. Ok, some things were a bit more difficult they might not understand them from the beginning but definitely it (the lesson) attracted their attention, they were watching carefully...

14. In what chapter of the music curriculum do you think it could be used?

In "Sound" or if it would be a different one, in "Electronic music or technology" ... Yes, "Technology".

15. How much time are you willing to offer for this kind of lessons in music?

Like I see them... with all this joy that they showed, 2 lessons at least sure!

a. At least?

Yes

i. Ok

16. Does it offer effective teaching?

Well, this was the first contact. Having in mind that each one would have his own computer and to try things out, definitely it would be effective.

17. Do you believe that these lessons can promote students' creativity?

Well it does promote it, maybe not with musical instruments, but to choose, to decide, to adjust the intensity of sound or delete... in general mixing, it is creative because its completely their own business.

18. Do you support the recording of the performances of the students?

Yes, because they feel good after and they are proud!

a. Nice!

19. Do you feel confident teaching this kind of lessons in the future?

Like I said before, considering that I will be practising to feel strong enough to deal with this lesson, in order to give the proper instructions to the "small ones"

Thank you

Thank you too!

OBSERVATIONS:

APPENDIX P: OBSERVATION SHEET

Appendix P: Observation sheet

Name of School:, Number of Students:....., Lesson number: Date:

Subject:	Outcomes achieved	Easy/difficult	Enjoyment	Teacher's respond	Student's respond
Activity 1					
Activity 2					
Activity 3					
Activity4					

Students' skills	Activity 1	Activity 2	Activity 3	Activity 4
Presentation				
Collaboration				
Communication				
Composition				
Performance				
Participation				
Understanding				

Revision/Test:

Comments:

Observation Sheet: **EXAMPLE**

Name of School: A, Number of Students: 23, Lesson number: 1, Date: 9/11/10

Subject:	Outcomes achieved	Easy/difficult	Enjoyment	Teacher's response	Student's response
Activity 1: Listening of "Poli chioni"	Focused listening of the sounds	Easy. Catchy song, could engage them	The students enjoyed it. They wanted to learn the lyrics.	She could guide the students. Ask questions, use the board. She could engage them in the learning process.	They identified the different sounds and how these sounds are around us and we need to be "active listeners"
Activity 2: Closed eyes and ears	Concentration. The students focused on listening	Medium. Some students did not hear the sounds of their heart or breath	At the point where they identified that there is always sound, it was a positive reaction	The teacher participated with the students to the exercise	They identified that there are "inner sounds".
Activity 3: Discussion around sound pollution	Great discussion on sound pollution and the environmental sounds	Easy. Students could link aural awareness and sound pollution with their ecology lesson and this was a positive outcome.	They really enjoyed the discussion. As students knew a bit more about pollution from their other lessons, they were all participating and happy.	The teacher's guidance and link with other subjects of the curriculum showed that these lessons can become cross-curricular	The students identified the meaning of aural awareness though the discussion about sound pollution
Activity 4: Comparison between sound of the sea and the mountain	The activity sparked their imagination and their engagement	Easy. All the students could participate in the discussion	Very engaging. It allowed them to be imaginative and this was very	The teacher guided the students but also allowed them to discuss with	The students identified the need to protect the acoustic environment

	to the lesson		positive.	the rest of the class their thoughts	from the mechanical sounds.
--	---------------	--	-----------	---	-----------------------------

Skills of students	Activity 1	Activity 2	Activity 3	Activity 4
Presentation				
Collaboration			√	√
Communication	√	√	√	√
Participation	√	√	√	√
Performance		√		
Understanding	√	√	√	√

Revision/Test: Completed by all students and corrected in the class before the end of the lesson.

Comments: Lesson 1 did not allow the development of presentation skills, but it proved that the revision/test sheet was important and helped some students to be clear relating to the terminology of Lesson 1.

Teacher's Information Pack

TEACHER'S INFORMATION PACK

To be used in primary and secondary schools for students
between 9 to 14 years old.

NASIA THERAPONTOS

2013

DE MONTFORT UNIVERSITY

SUPPLEMENTARY MATERIAL OF PHD THESIS

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Audio and audio-visual material:

The audio and audio-visual materials provided to the teachers for the fulfilment of the lesson plans are not provided, due to copyrights issues. The full list of the material used can be found below.

Lesson plan	Name of track	Composer/ Singer	Name of CD	Production company	Access online
Lesson plan 1	Πόλη χιόνι /Polichioni (Track n.2)	Φίλιππος Πλιάτσικας / Filippos Pliatsikas	Όμνια	HARVEST MINOS-EMI, 2007	http://www.youtube.com/watch?v=kU9tiBFcHg Official video clip.
Lesson plan 2	Nest of Wasps (Track n. 9)	Peter Cusack & Max Eastley	Day for night	Isle of Lewis: Paradigm discs, 2000	
Lesson plan 5	Peep show (Track n.1)				
Lesson plan 2	Zero Day to Zero Night (Track n. 3)				
Lesson plan 2	La Mer: La Mer Bleu (track n.6)	Theodore Lotis	Epoque de l'eau	Montreal: Empreintes Digitales, 2008	http://www.youtube.com/watch?v=vJQl9Ekd150
Lesson plan 3	Rainstorm	Perpetuum Jazzile			http://www.youtube.com/watch?v=BC8re5Hv0GI
Lesson plan 5	Presque rien n.1, le lever du jour au bord de la mer	Luc Ferrari	Presque Rien	INA-GRM, 1995	
Lesson plans 5 & 7	Etude aux objets 1er Mouvement	Pierre Schaeffer	Archives GRM: l'art de l'etude	INA-GRM/Hyptique, 2000	
Lesson plan 5	To BBC or Not	Leigh Landy			
Lesson plan 7	Silver Apples of the Moon, Part A	Morton Subotnick	Silver Apples of the Moon, The Wild Bull	WERGO, 1994	
Lesson plan 7	Sinus	Bret Battey			http://BatHatMedia.com/Gallery/sinus.html
Lesson plan 8	Tounge	John Young	ICMC 2002, Goteborg, Sweden	LJ Records, 2002	
Lesson plan 8	Red Bird	Trevor Wishart	Red Bird	EMF,1992	
Lesson plan 8	Mi.ss.ing	Nasia Therapontos			http://vimeo.com/35050963



PRIMARY SCHOOL

LESSON PLAN 1:

AURAL AWARENESS

School: Primary School

Class: 4th Grade

Lesson: “Aural Awareness”

PURPOSE: For students to increase their “Aural Awareness”, through activities relating to “Active Listening”, “Inner Listening”, “Acoustic Ecology” and “Sound Pollution”.

LEARNING AIMS AND OBJECTIVES:

- To further develop the ability to observe sounds
- To focus during activities
- To develop critical thinking on issues relating to the environment and sound pollution.
- To comprehend the notions of “Aural Awareness” and of “Active Listening” through the activities
- To work creatively on their own and within teams, recognising and discussing about sounds, noise and silence

ACTIVITIES:

- Listen to the song “Poli Chioni” and lead to discussion on “**Active and Passive Listening**”
- Close the ears and lead to discussion on “**Inner Listening and Silence**”
- Discussion around sound and ecology: “**Acoustic Ecology**”
- Discussion around “**Sound Pollution**”

PREREQUISITE KNOWLEDGE:

- No previous knowledge

MEDIA:

- White board
- Students’ Worksheets
- Teacher’s Material
- CD Player
- CD

TEACHER'S MATERIAL

Aural Awareness: “Sounds are to be listened to, not to be ignored.”

Starting point: How do we hear?

The most important instrument for a musician is how he/she listens. Throughout the centuries of music history, this important question was under researched. However in the 20th century, due to the industrial revolution, technology, and mainly the use of the sound recorder, all these enabled musicians to listen over and over again to the same sound through recordings. This enabled them to research, categorise and therefore increasing their “**Aural Awareness**”.

Activity 1:

Step 1: The class listens to a popular song, “Poli Chioni” by Philippos Pliatsikas, in which there are sounds from nature incorporated. As soon as the listening ends, students are asked to describe the sounds heard and, if possible, to recognise as many nature sounds as possible. Complete activity 1 of the worksheet.

Step 2: Students are asked to close their eyes while listening to the recording for the second time but this time they are asked to count the sounds they recognise using their fingers.

Outcome: This activity gives the opportunity to the students to discuss which sounds they recognised and compare them. This leads to a discussion relating to sounds that go unnoticed and their importance in making us “**Active Listeners**”.

Through exploring the way we listen, we learn to consciously place emphasis on the listening of sounds. The famous piece by John Cage “4’33” was used as a starting engine to turn our attention on the surrounding sounds. It is important to become “**Active Listeners**” and not “**Passive Listeners**”.



1.1 Close your eyes

Activity 2:

Step 1: Everyone in class close their eyes and ears for 3 minutes. When we open our ears, we discuss about sounds. Complete activity 2 of the worksheet.

Step 2: What have we observed? Did we experience absolute silence when our ears were closed? What have we observed regarding the volume of sounds when we opened our ears? Are there sounds we ignored during class?

Outcome: The purpose was to discover the sound coming from our own body: the sound of our breath, the beats of our hearts. This is called “**Inner Listening**”.

Additionally, discuss the sounds that go unnoticed during the lesson: People wondering outside, the sound of the wind...



1.2. Close your eyes and ears

Activity 3:

Step 1: When we ignore the sounds of nature, do we also ignore the environment and its warnings? Discuss.

Outcome: Aural awareness is linked to “**Acoustic Ecology**”. Acoustic ecology is the study of the effects of the acoustic environment, on the physical responses or behavioural characteristics of those living within it.

Activity 4:

Step 1: Discuss the differences between the sounds of a mountainside and seaside.

Step 2: What would happen if we infected the environment with human and mechanical sounds?

Outcome: Discussion on **sound pollution** and *Acoustic ecology*

Learning outcomes:

1. Aural Awareness: the ability to be aware of the sounds around you
2. Active Listening: to listen to the sounds with concentration
3. Inner sound and silence: the acknowledgment of the sounds of our body
4. Acoustic Ecology: the study of the acoustic environment
5. Sound pollution: the disturbance and pollution of the acoustic environment

STUDENTS' MATERIAL

Active listeners Vs. Passive Listeners

It is very important for a musician to realise how we listen to sounds around us. We know that we use our ears to listen, but how do we actually listen, is still a separate question. Our brain selects the sounds considered as important, excluding others considered less so. Nonetheless, when we are more concentrated and give more attention to sounds in general, we can listen to sounds which are usually gone by unnoticed. When we concentrate fully and listen carefully to the sounds around us then we consciously hear the sound and become **Active Listeners** rather than **Passive Listeners**. When we actively listen to the sounds around us, then we increase our **Aural Awareness**.

Acoustic Ecology

Aural awareness and active listening are connected with **Acoustic Ecology**. **Acoustic ecology** is the study of the aural-acoustic events that exist in a place, in relation with their effects on the animal and plant world,

Sound pollution

Training the ear to listening with awareness the sounds around and becoming Active Listeners, then we support and appreciate the environment and protect it from **sound pollution**. Sound pollution is the pollution of the acoustic environment.

WORKSHEET FOR LESSON 1: AURAL AWARENESS

Activity 1:

Write down the sounds that you identify from the song “Poli xioni” of Filippou Pliatsikas.

Activity 2:

Close your eyes and ears for 3 minutes. Open them and write the sounds you listened.

REVISION OF LESSON 1: AURAL

AWARENESS

1. Fill in the blanks using the following words:

(Sound pollution, acoustic ecology, active, aural)

The study of the acoustic events of an environment and its effects on those living within it, is called

The pollution of the sound system of a place is called

The focused listening of the sounds in the acoustic environment is called listening. In this way we increase our awareness.



Listening at home!

Create a sound-journal! Keep note of the sounds you can hear in your home. Did you find anything interesting or something that you did not notice before?

LESSON PLAN 2: SOUNDWALK

School: Primary

Class: 5th Grade

Lesson: “Soundwalk”

PURPOSE: For students to be able to distinguish sounds between natural and artificial within their school environment, through cooperation, experimentation and activities. The lesson also aims for students to learn the notions of “*Soundwalk*” and “*Soundscape*”.

LEARNING AIMS AND OBJECTIVES:

- To further develop the ability to notice sounds
- To recognize the sounds of nature and categorize them in natural and artificial
- To focus during activities
- To develop critical thought, through discussion and comments on the environment and its sounds

ACTIVITIES:

- Take a ‘Soundwalk’ in the school area.
- Categorize the sounds of the school’s environment in natural and artificial.
- To be able to observe and work in teams on the activities, with concentration

PREREQUISITE KNOWLEDGE:

- Acoustic ecology
- Active listening
- Aural Awareness

MEDIA:

- White board
- CD Player

TEACHER'S MATERIAL:

Natural and artificial sounds:

Natural sounds are human sounds (speech, singing, voices, screaming, crying, laughter, cough, heart beats etc.), the sounds of birds and animals, sounds coming from natural phenomena (e.g. thunder, lightning), the sounds of water (rain, raindrop, waves etc.), the sounds of air (wind, hurricane) etc.

Artificial sounds are sounds produced by human made objects, e.g. the sounds of cars, airplanes etc.

Activity 1:

Step 1: After explaining to students which are the natural and which are the artificial sounds divide the whiteboard in 2 parts.

Step 2: Use the CD player to play parts from musical pieces such as the ones provided below, that use sounds and ask students to categorise on the whiteboard the sounds they hear according to their type. At the same time complete Activity 1 of the Student's Worksheet.

Are there any sounds, which could belong to both categories?

Discuss.



2.1 Listening exercise



Listening!

- ✓ Peter Cusack & Max Eastley- Day for night: Nest of Wasps, Zero Day to Zero Night
- ✓ Theodore Lotis- Epoque de l'eau: La Mer: La Mer Bleu

Outcome: The students identify the types of the sounds and separate these in human and artificial. They are now ready to take a Soundwalk and explore the Soundscape of their school.

Soundwalk and Soundscape

Soundwalk: As the name suggests, it is a walk whose purpose is to explore sound. It is a type of active participation in the sound environment (Soundscape). The ultimate purpose of the Soundwalk is to encourage the participant to listen carefully and criticize the sounds that are heard and their support towards the balance or not in the acoustic environment (Barry Truax, Handbook for Acoustic Ecology, 1999).

Soundscape: Soundscape is a combination of sounds that create a sound environment, which can be recognisable and understandable from human and social groups.

Activity 2:

Step 1: Take as an example of a soundscape, your school; and take your students for a Soundwalk at the time of the lesson.

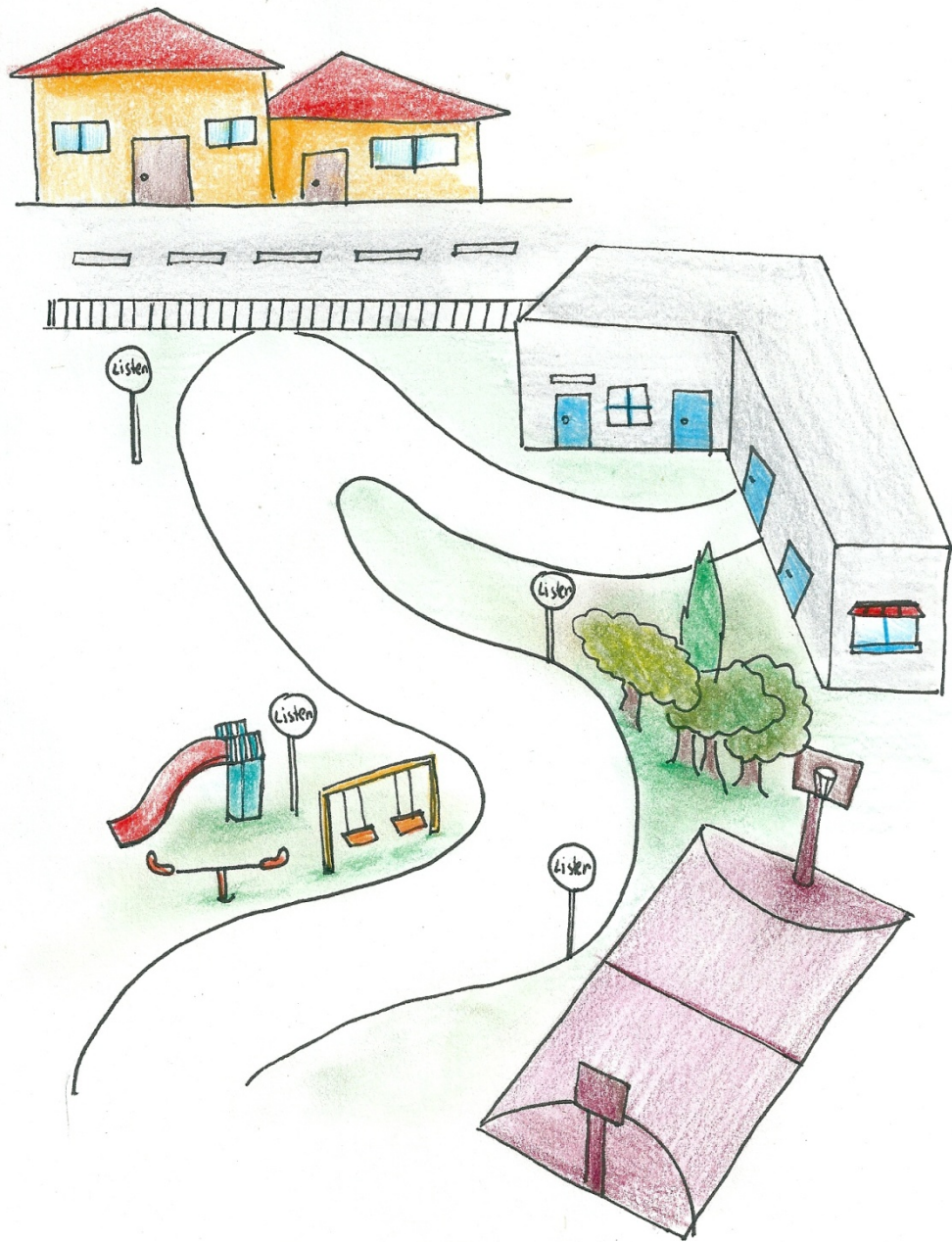
Step 2: Which sounds create this soundscape at the time of the lesson? Write each sound on worksheet 2, dividing them between natural and artificial.

Step 3: When you return in the classroom, imagine the soundscape of the school at the time of the break. Write down the sounds that you imagined dividing them between natural and artificial.

Step 4: Discuss in the classroom the sounds in the soundscape of the school, during the lesson period and during the break time. Do you identify changes in those sounds? Discuss around the ideas of "Aural Awareness", "Active Listening", "Sound pollution", "Soundwalk" and "Soundscape".

Learning outcomes:

1. Soundwalk: the careful listening of the sounds during a walk in a particular environment (soundscape)
2. Soundscape: the environment created by many sounds that can be understood and be recognised by human and social groups.



2.2 Soundwalk

WORKSHEET FOR LESSON 2: SOUNDWALK

Activity 1:

Write down the sounds you have identified during the music listening, Take a Soundwalk in the schoolyard.

NATURAL

ARTIFICIAL

--

Activity 2:

Take a Soundwalk in the schoolyard. Write down the sounds you have heard now and the sounds that can be heard during break time.

NOW

BREAK TIME

--

REVISION FOR LESSON 2:

1. Fill in the blanks using the following words:

(Natural, artificial, Soundscape, Soundwalk)

The study of a sonic environment, is known as

..... sounds are human sounds and sounds of natural phenomena.

A walk in a soundscape, that its purpose is to discover, listen to and explore its sounds is called

..... sounds are sounds created by humans, like the sound of engines.



Listening at home!

Go for a soundwalk in your neighbourhood. Hold your sound-journal and take notes of the sounds you notice and hear. Divide these in natural and artificial. Keep your journal updated for a few weeks. Do you notice any changes in the soundscape of your neighbourhood?

LESSON PLAN 3: REDUCED LISTENING

School: Primary School

Class: 6th Grade

Lesson: **Musical Properties of Sounds**

PURPOSE: To enable students to develop the skills of *reduced listening*, hearing sound for its own sake and for its musical qualities and not for its meaning, source or cause.

LEARNING AIMS AND OBJECTIVES:

- To cultivate the ability to notice the sounds
- Describe sounds according to their musical qualities.
- To be concentrated during the activities
- Develop critical thinking through discussion and collaboration relating to the environment, its sounds and their use in musical compositions.
- To understand the idea of "***Reduced listening***"
- To learn to identify some characteristics of sounds (***pitch, volume, timbre, duration***) through examples.
- To be able to observe and work in groups during the activities with concentration.

ACTIVITIES:

- Find the musical properties of sounds
- Compare the musical properties of different sounds
- Find similarities between the musical properties of different sounds
- Watch a performance on the projector
- Perform "rain and thunder" using sounds from your body

PREREQUISITE KNOWLEDGE:

- Active Listening
- Aural awareness

MEDIA:

- Whiteboards
- CD Player
- Projector

TEACHER'S MATERIAL

Reduced Listening is a technique developed by Pierre Schaeffer (1983) in which we listen to the sound itself, ignoring the real or imagined source and the meaning it carries. This listening strategy removes the source which is attached to the sound, as well as its meaning, and focuses on its intrinsic characteristics.

Try to convey this listening strategy to the students through this lesson of musical properties of sounds, focusing on the sound's intrinsic characteristics.

Starting point: I clap my hands in the classroom and ask students to tell me for which reasons we might hear this sound and what can it mean.

Debate.

Examples that may occur in the classroom:

I clap for:

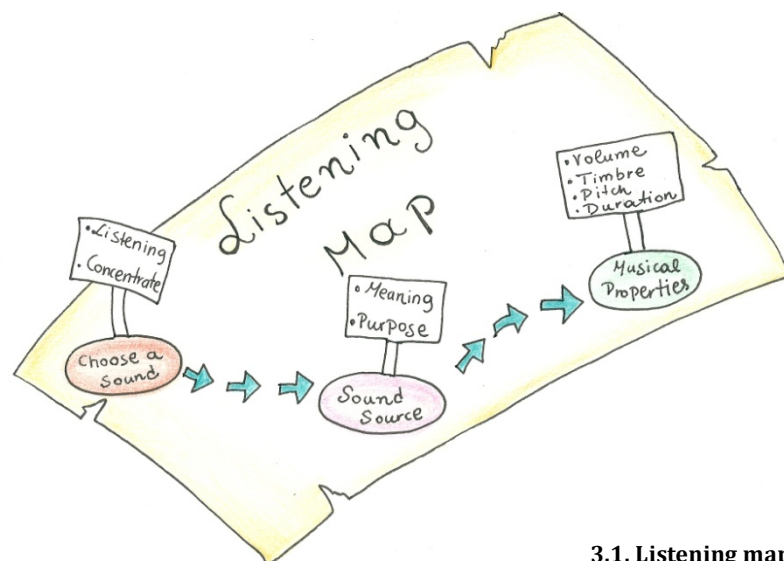
- Rewarding
- To grab someone's attention
- It keeps the pace in dances

All are connected to the meaning and purpose of the clap.

If you had to describe the sound of a clap to someone from another planet, who had never heard one before, how would you describe it? What remains?

✓**The musical properties of the sound:** strong sound, short, high pitched...

Listening Map



3.1. Listening map

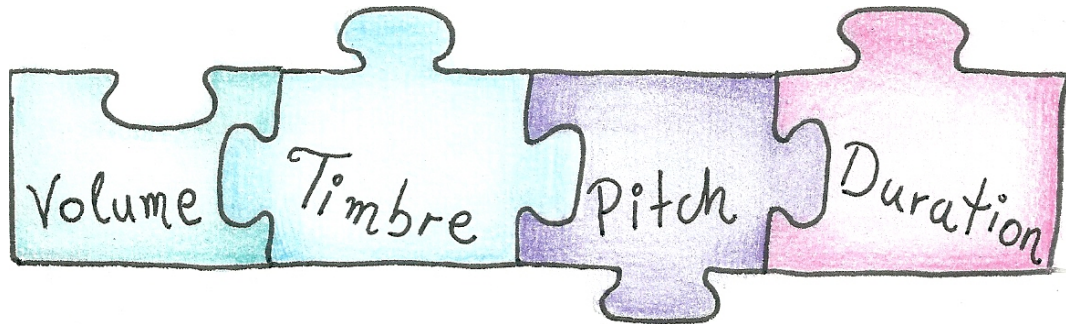
Activity 1:

Step 1: Draw 4 circles on the whiteboard. Write in each circle one of the below: *volume, pitch, timbre, duration*.

Step 2: Discuss the properties of musical sounds in relation to these four.

Musical Properties

3.2. Musical properties of sound



Activity 2:

Step 1: Clap your hands very hard between them. Ask students to write on worksheet 3 the musical properties of this sound.

Discuss the musical properties of the sound of applause, not meaning or causes.

Possible answers:

- High/Low pitch
- Instant
- Loud
- Noisy

Clap again your hands, but this time very softly. Ask students to write in worksheet 1, the musical properties of this sound.

Possible answers:

- Quiet
- Instant
- Soft

Outcomes: Even if the action has the same meaning, the sounds can have different musical properties.

Activity 3:

Step 1: Now ask them to imagine the sounds of thunder and write their answers next to the characteristics of the loud clap.

Step 2: Then ask them to imagine the sound of light rain and write their answers next to the characteristics of the soft clap.

What do you notice?

Are there any similarities between the musical properties of the 4 sounds?

Discuss.

Outcomes: Students can realise that sounds have the same music properties even if they do not have the same meaning. This is the fundamental basis of “**reduced listening**”

Activity 4:

Step 1: Prepare the projector for the film material 1*.

Step 2: Watch the performance on the projector and discuss the use of the sounds of fingers, hands and feet to simulate rain and thunder.

What they get from the sounds of fingers, hands and feet?

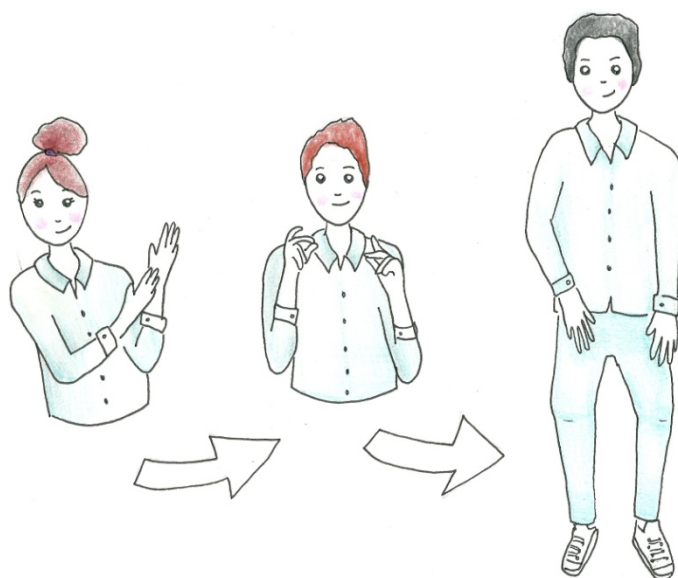
Different musical properties.

Step 3: Ask to indicate the characteristics borrowed from the sounds of fingers, hands and feet that combine the sounds of thunder and rain (storm).

Activity 5:

Step 1: Divide the class into two groups and attempt to re-produce the performance of the video, become their director, indicating entries and changes:

1. Rub your palms together (“light showers”)
2. Clap your fingers without a particular pace and gradually getting louder (“rain”)
3. Tap their knees and feet without a specific rhythm and gradually getting louder (“loud rain”)
4. And finally divided into 2 groups jump one group after the other (“thunder”)



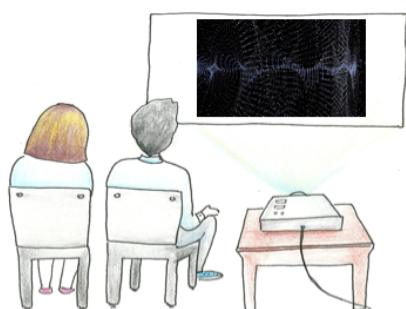
3.3. Steps 1, 2 & 3 for the performance of “rain and thunder”

Outcomes: The performance of “rain and thunder” using sounds of our body can show to students that sounds can be used regardless of their meaning and source. Their musical properties and intrinsic characteristics might have similarities with other sounds and can be used in compositions and performances.

Learning Outcomes:

1. **Reduced Listening:** The listening strategies, which remove the source attached to the sound as well as its meaning, and focus on the intrinsic characteristics of sounds.
2. **Performing with body sounds:** the use of our body to create sounds and the ability to collaborate in the class and create a performance.

Watch and Listen!



✓ Performance by the ‘Perpetuum Jazzile’, Rainstorm (access online)

WORKSHEET FOR LESSON 3: REDUCED LISTENING

Activity 2 & 3:

Sound	1 st Sound	Thunder	2 nd Sound	Light rain
Musical properties				
Volume				
Pitch				
Duration				
Timbre				

REVISION OF LESSON 3: REDUCED LISTENING

1. Fill in the blanks using the following words:

(volume, pitch, timbre, duration, reduced)

The listening technique by which we listen to sounds themselves, without identifying or caring about its source and meaning is called listening.

The musical property of sound which investigates how loudly or softly a sound is heard is called

The musical property of sound which describes the quality of sound is called

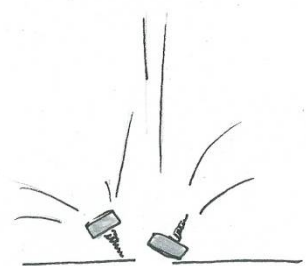
The musical property of sound which investigates how low or high a sound is, is called.....

The musical property which describes the length of a sound is called



Listening at home!

Try to find three sounds that are repeating over a period of time. Then try and describe them identifying their musical properties. Try this over and over again. Did anything change in the way you listen to these sounds?



SECONDARY SCHOOL

LESSON PLAN 4: ACOUSTIC ECOLOGY

School: Secondary School

Class: 1st Grade

Lesson: “Acoustic Ecology”

PURPOSE: The lesson aims to engage students in “active listening” and to develop students’ understanding of the concept of “Aural Awareness”, while promoting cooperation and experimentation during the activities.

Also aims for students to recognise the significance of sounds in relation to ecology. More specifically, aims students to identify the importance of acoustic ecology, through activities, including a Soundwalk.

Additionally the lesson aims for students to distinguish sounds between natural and artificial.

LEARNING AIMS AND OBJECTIVES:

- To cultivate the ability to notice the sounds
- To concentrate during the activities
- To develop critical thinking through the discussion on environmental issues, such as sound pollution.
- To understand the concept of a Soundwalk.
- To distinguish sounds between natural and artificial
- To be able to observe and collaborate in group activities

PREREQUISITE KNOWLEDGE:

- No prior knowledge

MEDIA:

- Whiteboards
- Students’ Worksheet
- Teacher’s Material

TEACHER'S MATERIAL

Aural Awareness: “Sounds are to be listened to, not to be ignored.”

Starting Point: How do we hear?

The most important instrument for a musician is how he/she listens. Throughout the centuries of music history, this important question was under researched. However in the 20th century, due to the industrial revolution, technology, and mainly the use of the sound recorder, all these enabled musicians to listen over and over again to the same sound through recordings. This enabled them to research, categorise and therefore increase their “**Aural Awareness**”.

Exploring the way we listen we learn consciously to give emphasis on hearing the sounds.

Activity 1:

Step 1: When we ignore the sounds of nature, do we also ignore the environment and its warnings? Discuss.

Outcome: Aural awareness is linked to “**Acoustic Ecology**”. Acoustic ecology is the study of the effects of the acoustic environment, on the physical responses or behavioural characteristics of those living within it.

Natural and artificial sounds:

Natural sounds include: human sounds (speech, singing, shouting, screaming, crying, laughing, coughing, heartbeat, etc.), the sounds of birds and animals, the sounds that come from natural phenomena (eg. lightning, thunder), the sounds of water (rain, drops, waves etc.), sounds of air (sum of leaves, wind, hurricanes), etc.

Artificial sounds include sounds, which are a result of man-made objects: such as sounds of cars, airplanes, etc.

Activity 2:

Step 1: Ask students to give examples of natural and artificial sounds that could be heard in the school environment.

Are there any sounds, which could belong to both categories?

Discuss.

Soundwalk and Soundscape:

Acoustic ecology: Acoustic ecology is the study of the acoustic (sound) events that exist in the animal and plant life.

Soundwalk: It is a walk to explore sound. It is a kind of active participation within the sound environment (Soundscape). The purpose of Soundwalk is for the participant to listen carefully and critically the sounds that are being heard in the acoustic environment. The participant can identify the contribution of the sound events towards the balance, or not, of the acoustic environment.

Soundscape: Soundscape is a combination of sounds that creates a sound environment, which can be recognisable and understandable from human and social groups.

Activity 3:

Step 1: Take as an example of a Soundscape, the schoolyard and explore it by taking the students out for a Soundwalk.

Step 2: What are the ingredients of this Soundscape? Complete the worksheet (exercise 1), by identifying the natural and artificial sounds of the Soundscape.

Did you identify any sounds that you did not mention in the previous exercise? Why?

Sound pollution:

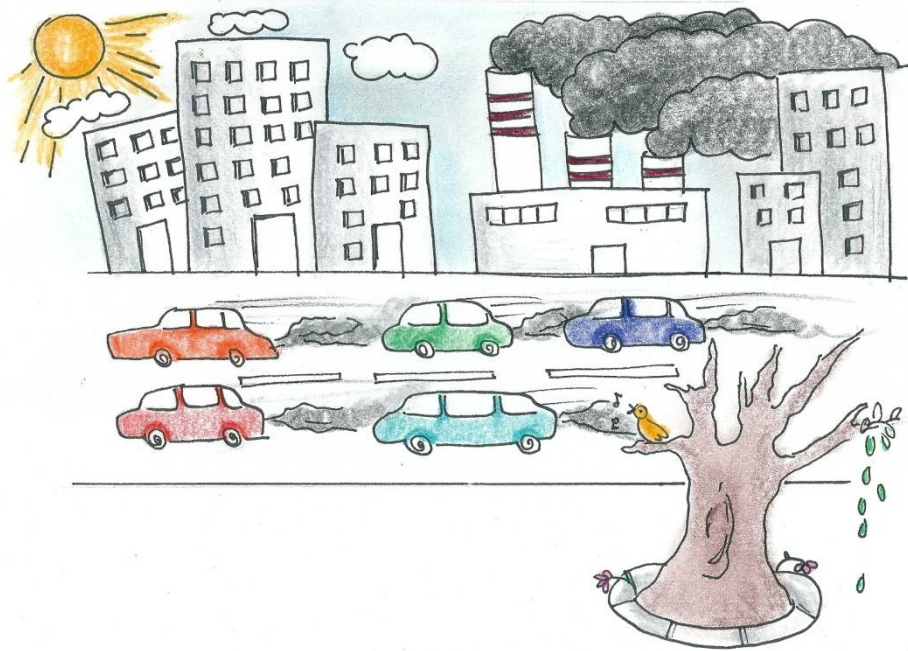
Practising our hearing and listening consciously to the sounds around us, we become **Active Listeners** who appreciate the living environment and protect it from **noise**. **Noise is the unwanted sound.**

Activity 4:

Step 1: Discuss the differences between the sounds of a mountainside and seaside.

Step 2: What would happen if we infected the environment with human and mechanical sounds?

Outcome: Discussion on **Sound pollution** and **Acoustic ecology**



4.1. Sound pollution

Learning outcomes:

1. Aural awareness: the ability to notice the sounds around you.
2. Natural and Artificial sounds: Sounds can be divided in two categories relating to their source ex. From nature, or created by humans.
3. Soundwalk and Soundscape: the active walk in an acoustic environment which aims to actively listen to the sounds of a particular area (soundscape).
4. Sound Pollution: the pollution of the soundscape with artificial sounds
5. Active listeners: the listener who concentrates in order to listen to the sounds around him/her.

STUDENTS' MATERIAL

Active listeners Vs. Passive Listeners

It is very important for musicians to know how we listen to the sounds around us. We know that we use our ears to listen, but how do we actually understand the sound events remains a separate question. Our brain selects the sounds considered as important, excluding others considered less so. Nonetheless, when we are more concentrated and give more attention to sounds in general, we can listen to sounds which are usually gone by unnoticed. When we are fully concentrated and listen carefully to the sounds around us, then we consciously hear the sounds and become **Active Listeners** rather than **Passive Listeners**. When we actively listen to the sounds around us, then we increase our **Aural Awareness**. We are aware of what happens in our surrounding **acoustic environment**.

Natural and artificial sounds

Natural sounds include: human sounds (speech, singing, shouting, screaming, crying, laughing, coughing, heartbeat, etc.), the sounds of birds and animals, the sounds that come from natural phenomena (eg lightning, thunder), the sounds of water (rain, drops, waves etc.), sounds of air (sum of leaves, wind, hurricanes), etc.

Artificial sounds include sounds, which are a result of man-made objects, such as sounds of cars, airplanes, etc.

Acoustic Ecology

Aural awareness and active listening are connected with **Acoustic Ecology**. **Acoustic ecology** is the study of the sound events that exist in a place, in relation with their effects on the animal and plant world. We actually study the sounds that create an acoustic environment.

Sound pollution:

Practising our hearing and listening consciously to the sounds around us, we become **Active Listeners** who appreciate the living environment and protect it from **noise**. **Noise is the unwanted sound**.

Soundwalk:

It is a walk to explore sound. It is a kind of active participation within the sound environment (Soundscape). The purpose of the Soundwalk is for the participant to listen carefully and critically to the sounds that are being heard and to identify their contribution towards the balance, or not, of the acoustic environment.

Soundscape:

Soundscape is a combination of sounds that create a sound environment, which can be recognisable and understandable from human and social groups.

WORKSHEET FOR LESSON 4: ACOUSTIC ECOLOGY

Exercise 1:

Go on a Soundwalk in the schoolyard and write down the sounds you have heard by categorizing them in natural or artificial.

NATURAL

ARTIFICIAL

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REVISION FOR LESSON 4

1. Fill in the blanks using the following words:

(Sound pollution, acoustic ecology, active, aural, natural, artificial, Soundscape, Soundwalk)

The study of the acoustic phenomena in an environment and its effects on those living within it, is called

The pollution of the sound system of a place is called

The focused listening of the sounds in the acoustic environment is called listening. In this way we increase our awareness.

The study of a sonic environment, is known as

..... sounds are human sounds and sounds of natural phenomena.

A walk in a soundscape, that its purpose is to discover, listen to and explore its sounds is called

..... sounds are sounds created by humans, like the sound of engines.



Listening at home!

Go for a Soundwalk in your neighbourhood. Create a sound-journal and take notes of the sounds you notice and hear. Divide these in natural and artificial. Keep your journal updated for a few weeks. Do you notice any changes in the soundscape of your neighbourhood?

LESSON PLAN 5

REAL-WORLD SOUNDS IN COMPOSITIONS

School: Secondary school

Class: 2nd Grade

Lesson: **Real-world sound compositions**

PURPOSE: The lesson aims to educate students in order to identify the use of real-world sounds in music compositions. Also for students to learn about the tradition of “Musique Concrète” and the Soundscape composition.

LEARNING AIMS AND OBJECTIVES:

- To cultivate the ability of the students to observe sounds
- To help students concentrate during the activities
- To develop the critical thinking of students through discussion relating to the acoustic ecology, soundscapes and its sounds.
- To learn about the traditions of "Musique Concrète".
- To be able to work in groups during the activities with concentration and collaboration.

PREREQUISITE KNOWLEDGE:

- Active Listening
- Aural Awareness
- Natural and artificial sounds

Teaching aids:

- Whiteboards
- Teacher’s material
- Students’ Worksheet
- CD Player
- CD

TEACHER'S MATERIAL

Starting Point

Before this lesson, ask students to bring to the classroom one of their favourite objects from home.

Use of real-world sounds in compositions:

With the ability to record sounds, musicians have found ways to include real-world sounds in their compositions. These sounds can be used as they are, or they can be manipulated. Two compositional traditions take their material from real-world sounds: the “Musique Concrète” and the “Soundscape composition”.

Soundscape composition:

Soundscape composition is a compositional strategy that intends to provide its listeners with information about the context that the sounds were recorded in.

Musique Concrète:

On the other hand, “Musique Concrète” is the music developed by Pierre Schaeffer in 1948, to describe the music he was creating. He used this term to describe the use of concrete sound material, from heard sound, and then abstract its musical values to create music.

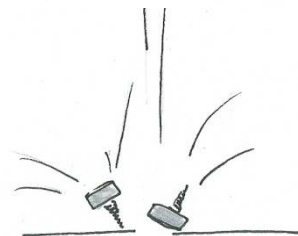
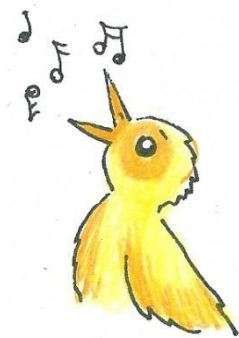
The contrast between the two traditions is that soundscape composition aims to give contextual information to the listener about the piece, whereas Musique Concrète primarily is concerned about shifting the listener's focus on the qualities of the sounds.

Activity 1:

Step 1: Listening!

Listen to the tracks identified below, which include compositions using real-world sounds and complete exercise 1 of the students' worksheet. Students need to concentrate during the listening of the tracks and recognise the sounds used.

Step2: Then discuss the different sounds identified and their use in the compositions.



5.1. Real-world sounds



Listening!

- ✓ To BBC or Not (Leigh Landy)
- ✓ Peep show (Peter Cusack & Max Eastley)
- ✓ Etude aux objets 1er Mouvement. (Pierre Schaeffer)

Activity 2:

Step 1: Divide the students in groups depending to the needs of the classroom

Step 2: Use the objects brought by the students in groups within these groups:

1. Experiment with your objects and discover the most interesting sounds they produce.
2. Write a story based on the sounds of the objects you brought.
3. Perform your sound story in front of your classmates.
4. Record your sound story.

Outcomes: Discover the ability to use real-world sounds in compositions

5.2. Objects from home



WORKSHEET FOR LESSON 5

REAL-WORLD SOUNDS IN COMPOSITIONS

Real-world sound in compositions

Exercise 1:

Listen to the audio tracks and write the sounds you recognise for each music composition.

Discuss the different use of real-world sounds in each composition.

<u>To BBC or Not</u>	<u>Peep Show</u>	<u>Etude aux objets</u>

Exercise 2:

Create a sound story in your groups, using the sounds of the objects you brought from home. Write it below.

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Listening!

- ✓ Luc Ferrari- Presque rien n.1, le lever du jour au bond de la mer (Soundscape composition)
- ✓ Pierre Schaeffer- Etude aux objets 1er Mouvement. (Musique Concrete)

LESSON PLAN 6: MUSIC TECHNOLOGY

School: Secondary School

Class: 2nd and 3rd Grade

Lesson: **Music Technology**

PURPOSE: Introduce students to the music program Audacity and familiarise them with some effects used within the program. This will give them a new perspective of how to use technology in music.

LEARNING AIMS AND OBJECTIVES:

- To learn the basic usage of Audacity
- To learn several ways to edit sound
- To learn various sound effects
- To understand the use of technology for music compositions

PREREQUISITE KNOWLEDGE:

- Basic computer skills

MEDIA:

- Whiteboards
- CD Player
- Computers
- Internet connection, to download 'Audacity'
- Students' Worksheets
- Teacher's Material

TEACHER'S MATERIAL

Music Technology

Using music technology, we can edit, transform and create new sounds. These sounds can be edited in order to keep their source recognised, or it can be altered to become a more abstract sound with no recognisable source.

“Audacity” is freeware music software, which allows the user to use effects on imported sounds and create a multi-track composition. The specific software allows easy access to effects that can be used directly on imported sound tracks.

“Audacity” includes several common tools used in popular programs and software, such as Microsoft Word, which are familiar to students. Within the software the user/composer can delete, cut and paste, copy and paste as well as drag and drop different parts of the imported sounds or complete tracks.

Nonetheless, Audacity offers some sound effects, which alter the sound to meet the needs of the composition. These effects are added to the part of the sound chosen or can be used on the whole track.

The most common effects are echo, reverse, time stretch and delay. Also during the playback of the tracks there are tools that can either mute tracks or solo other tracks, by choosing them.

Discuss with your students the various sound effects and tools that can be found in Audacity, comparing these with the sounds heard in different soundscapes.

6.1 Audacity – Music Technology



AUDACITY SOFTWARE

Activity 1:

Steps:

1. Connect the PC which you have already installed “Audacity” on, with the Projector.
2. Import to the software “Audacity”, the recordings of your students’ performance of the sound story composed with their objects, from the previous lesson.
3. Using the Students’ Material sheet, explain to the students, step by step, how to import an audio file and how to use the different tools of the software (copy, paste, cut, drag and drop)
4. Working with the whole class let the students guide you in choosing different parts of their compositions and adding effects on them. You can either work in groups, with each group’s recording separately or work with all students at the same time).
5. Create a multi-track composition using the recordings of all the groups and allow students to add to their composition until they are satisfied with the result.
6. Save the composition of students in a new audio file.
7. Export the audio file as an mp3 format and give it to each student, to take home.

Activity 2:

Give to students the worksheet for lesson 6 and complete the exercise on sound effects and tools.

Homework:

Ask students to download “Audacity” at home following the guidelines on Students’ Material and try to change, manipulate or add effects on their compositions.

STUDENTS' MATERIAL

Instructions for Audacity

1. Download the software from the page <http://audacity.sourceforge.net/>
 - a) (Choosing the most suitable for the computer you are using (PC or MAC))
2. Open the software by clicking 2 times on the icon of Audacity
3. To import a sound into the software choose: *File, Import, Audio*
4. Choose the sound that you wish to import and select *Open*
5. If the sound you want to import is in mp3 format then you will see a window that measures the time of import and then you will see the waveform of your sound in stereo or mono channel.
 - a) If your sound is not in mp3 format then the software may require you to download a library that supports this audio format such as FFmpeg. Follow the instructions provided.
6. For choosing the sound click on the sound waveform.
7. To select a portion of the waveform, then left click and hold from the beginning of the point you want to select and drag your mouse up to the point you wish, and release.
8. To edit a sound either select it in its whole or select a portion and click *Edit*. There you'll find basic tools such as *copy, cut, delete* and *paste*.
9. To try the various sound effects included in the software, select *Effect* and choose any of the effect provided such as *Echo, Invert, Fade in, Fade out* etc. (again selecting all or part of the sound you want to affect).
10. To save your changes you can either save the entire project in Audacity by selecting *File, Save project as*, and give your own title to your project as a new file or you can save it in the file you were already working in.
11. To export the new sound composition choose *File, Export*. Choose the name and place as well as the format that you wish to export (ex. mp3) and then the sound is exported from Audacity as an independent sound that can be used in other programs or back into Audacity.
 - a) Again, there is a possibility that the software might request a special library (ex. Lame Library) to extract the desired formats, thus follow the instructions provided.

Outcomes: Students need to experiment and learn the basic functions of using the Audacity software as well as any other music technologies.

#Try it at home!

STUDENTS' WORKSHEET

Exercise 1:

Please circle in blue the sound effects and in red the tools that can be found in Audacity

Repeat

Software

Audacity

Loop

Echo

Solo

Cut

Delay

Delete

Paste

Copy

Reverse

Mute

Time stretch

LESSON PLAN 7

SYNTHESISED (GENERATED) SOUND AND IMAGE

School: Secondary School

Class: 2nd and 3rd Grade

Lesson: **Synthesised sound and image**

PURPOSE: For students to learn about synthesised sounds and the abilities of music technology.

Additionally, students learn about the electroacoustic music tradition as a contrast to the tradition of musique concrète.

Moreover, the lesson aims to attract the attention of the students on the connection between sound and image.

LEARNING AIMS AND OBJECTIVES:

- To cultivate the ability to observe sounds
- To concentrate during the activities
- To develop critical thinking through the discussion about sounds and their use in musical composition.
- To learn about the use of synthetic sounds in compositions
- To learn about the tradition of 'electronic music'
- To observe and work collaboratively in groups to complete the activities with concentration.
- To critically think and discuss the connection of sound and image

PREREQUISITE KNOWLEDGE:

- Music technology and sound effects
- Musique concrete
- Active listening
- Ability to identify natural and artificial sounds

MEDIA:

- Whiteboards
- Projector
- Computer
- DVD

TEACHER'S MATERIAL

Synthesised or Generated sound:

The sound created electronically or digitally, using a machine (usually a computer or a synthesiser) is called synthesised or generated sound. This sound can be created from scratch, or it can be a manipulation of an existing sound until it becomes a “new sound”. This lesson focuses on the sounds that are generated not manipulated.

Elektronische Musik:

The term “Elektronische Musik”, which is translated as ‘electronic music’ has come to have different meanings in different countries, but its German name “Elektronische Musik” has historic links with the studios of Cologne in the early 1950s. This specific historic term refers to the idea to create music that uses electronically generated sounds, rather than real-world sounds as in the tradition of “Musique concrète” in Paris.

Activity 1:

Step 1: Listening!

Listen to the tracks below, which include compositions from the two opposing traditions of “Elektronische Musik” and Musique concrète. Discuss the sounds you hear. Are there any similarities between the two traditions? Do you think that real-world sounds and generated sounds can be part of a single composition?

Students need to concentrate during the listening of the tracks and discuss the sounds heard.



Listening!

- ✓ Morton Subotnick - Silver Apples of the Moon: Wild Bull
- ✓ Pierre Schaeffer- L'art de l'étude: Etude aux objets 1er Mouvement

Similarities?

Both real-world sounds and generated sounds can be used in compositions for their intrinsic characteristics (see Lesson Plan 3). These sound qualities make the sounds interesting enough to be used as part of a music composition.

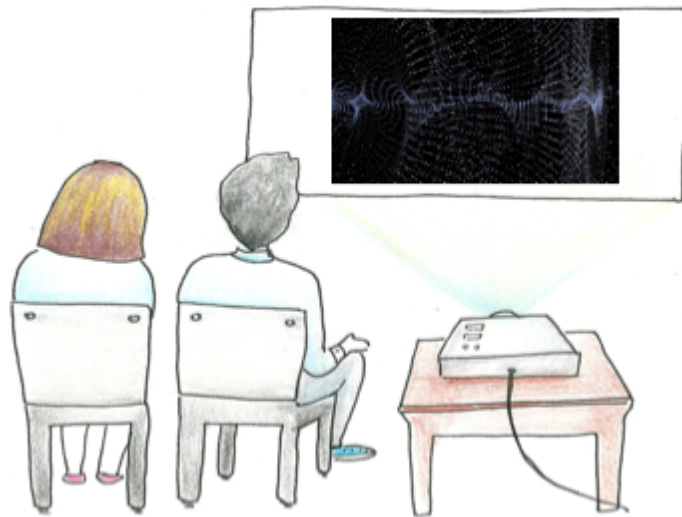
Differences?

Real-world sounds can be used for their ability to have specific meaning or references to places, such as soundscape compositions. In contrast, generated sounds are usually used exactly for their ability to be free from contextual references (even though this is not always true, as some synthesised sounds have unique characteristics coming from the machinery used for their creations- such as synthesisers).

Activity 2:

Step 1: Prepare the computer and projector for a music listening and viewing of "Sinus Aestum" by Bret Battey (DVD).

7.1. Video projection



This composition uses synthesised sounds and image created by the composer.

"Sinus Aestum" is the third in a set of pieces I call the "Luna Series". Each piece is named after a feature of the moon. On the moon, Sinus Aestum is a dark plain articulated by threads of white dust, like tips of flowing and silent waves. The name can be translated as Bay of Billows.

The piece presents one sound-synthesis process and nearly 12,000 individual points, which are continually transformed and warped, restrained and released to make flowing waves of sound and image.

All three of the Luna Series pieces reflect to some degree my experience with Buddhist Vipassana meditation, in which the body feeling like something solid can transform into the body feeling like a flow of particles."

Bret Battey program notes

Step 2: Listen and watch carefully with your students the composition and then

Discuss:

- The use of sounds
 - Can you recognise if these are generated or real-world sounds?
- The use of images
 - What do you think is the inspiration for the images?
- The relationship of the movement of the video images and sounds
 - Is there a connection between the two?

Step 3: Complete exercise 1-4 of the students' worksheets.

Step 4: Discuss the answers of the students for exercises 1-4. Did the students identify the connection of sound and image? Did the students manage to identify the inspiration of the composition?

Step 5: Reveal to the students the intentions of the composer for the composition and complete exercise 5.

Do the students believe the composition was successful in relation to the intentions of the composer?

Discuss.

Learning outcomes:

1. Students can realise the potential to create sounds using music technology.
2. The link between sound and image and the ability of composers to create both their own sounds and images.
3. Identify the existence of synthesised sounds in compositions.

WORKSHEET FOR LESSON 7

SYNTHESISED SOUND AND IMAGE

1. Can you recognise whether the sounds in the composition “Sinus Aestrum” are synthesised or real-world sounds?

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2. How did the composer use the sounds in the composition?

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3. What was the relationship of the images with the sounds?

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4. What do you think is the inspiration behind this composition?

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5. Now that you know the intentions of the composer, do you think he managed to portray it in a nice way, through this composition?

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LESSON PLAN 8: SOUND-BASED MUSIC (REVISION)

School: Secondary School

Class: 3rd Grade

Lesson: Revision

PURPOSE: For students to learn about the history of music in the 20th century and especially for the development of music technology and the use of sounds in music compositions.

More specific to remember the terms “Musique Concrète” and “*Elektronische Musik*,” and the use of both real-world sounds and generated sounds as part of music compositions.

Also the lesson offers an opportunity to students to think critically in relation to the national problem of Cyprus, and realise that music can offer a means for expression of more cultural and social problems.

LEARNING AIMS AND OBJECTIVES:

- To develop the ability of students to observe sounds
- To be able to concentrate during the activities
- To develop critical thinking through discussion and commentary on generated and real-world sounds and their use in music composition.
- To be able to observe and collaborate in group activities with concentration and
- To develop critical thinking in relation to the composition of music to express cultural or social issues.

PREREQUISITE KNOWLEDGE:

- Acoustic Ecology
- Active Listening
- Soundwalk
- Soundscape
- Musique concrete and electronic music
- Music technology and sound effects
- Natural and artificial sounds

MEDIA:

- Whiteboards
- CD Player
- Projector
- Recorder

TEACHER'S MATERIAL

Sound-based music:

Sound-based music is “the art form in which the sound, that is, not the musical note, is its basic unit” (Landy L., 2007. Understanding the Art of Sound Organization. Cambridge: MIT Press)

In sound-based music there is the possibility to use both real-world sounds and generated sounds. These sounds can be identifiable or not, provide a sense of context or not, and can create link between the ideas of recognisable sounds and abstracted ones.

Activity 1:

Step 1: Review the previous lessons by reminding to the students some exercises around active listening as well as the use of real-world sounds and generated sounds in compositions.



8.1. Soundscape recording

Activity 2:

Step 1: Connect the computer/DVD player with the projector

Step 2: View and listen to the composition “Mi.ss.ing” by Nasia Therapontos which uses both real-world sounds and synthesised sounds, and discuss not only about the use of sounds but also about the historical, social and cultural issues it involves.

Discuss:

- The sounds
- The pictures
- The change of colours
- The intensity of the voices
- The story of the composition

Music listening and viewing "Mi.ss.ing".

“Mi.ss.ing is one of two sound-based music compositions, composed as part of a project aiming to convey some light over the Turkish invasion in Cyprus.

The composition uses both real-world sounds and synthesised ones. The recorded sounds include sirens heard each year at the anniversary of the invasion, as well as interviews of some survivors of the invasion. Also, the names of the missing people from the invasion are heard in the background of the interviews. The background sounds are synthetically composed to create a continual drone.

The composition is divided in three parts, and these are obvious from the visual images. Continual photographs in black and white, as well as red create the visuals. The change of colour in the visuals, mark the changes of the structure of the piece.

The piece aims to attract people reactions and educate them in relation to the Cypriot problem. It also aims to wake up the emotions of the Cypriot viewers.”

Nasia Therapontos program notes

Learning outcomes:

1. The specific lesson offers an opportunity to teachers to revise the previous lessons and for students to remember and use their knowledge for this lesson.
2. This lesson identifies the opportunity to use both real-world sounds and synthesised ones in compositions.
3. Students can find an opportunity to discuss about the Cypriot problem through music.

REVISION OF LESSON 8: SOUND-BASED MUSIC

1. Fill in the blanks using the following words:

(synthesised, active, soundwalk, reduced, aural)

The focused listening of the sounds in the acoustic environment is called listening. In this way we increase our awareness.

A walk in a soundscape, that its purpose is to discover, listen to and explore its sounds is called

The listening technique by which we listen to sounds themselves removing the true or hypothetical source and meaning they might carry is called listening.

Sound-based music compositions can include both recorded real-world sounds and sounds.



Listening!

- ✓ Trevor Wishart- Red Bird: Red Bird
- ✓ John Young- ICMC 2002 GOTEBORG SWEDEN: Tounge

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